

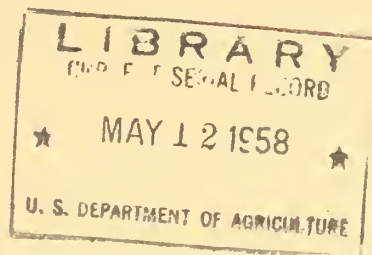
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FEDERAL-GRANT RESEARCH
at the
STATE AGRICULTURAL
EXPERIMENT STATIONS

Projects on
DAIRY CATTLE
Part 5

Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

Compiled by

the State Experiment Stations Division,
Agricultural Research Service, U. S.
Department of Agriculture, Washington 25,
D. C., for use of workers in agricultural
research in the subject-matter areas
presented. For information on specific
research projects write to the Director
of the Station where the research is being
conducted.

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STATE AGRICULTURAL EXPERIMENT STATIONS

Projects on

DAIRY CATTLE

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INTRODUCTION

This compilation is one of a series providing information on State agricultural experiment station research supported by Federal-grant funds appropriated annually by Congress under authorization of the Hatch Act of 1887, as amended and approved Aug. 11, 1955, and Section 204(b) of the Agricultural Marketing Act of 1946. It is prepared for use by research workers in the subject-matter areas presented. Only that part of each State's research program supported by Federal-grant moneys is included.

In addition to the Federal-grant moneys, the State experiment stations receive some Federal support through cooperative agreements or contracts with the U. S. Department of Agriculture. Information on such research, along with other departmental research, is available in the Central Project Office, Agricultural Research Service.

A substantial part of each State agricultural experiment station's research is supported with moneys appropriated by the respective State or Territorial Legislatures and through other forms of private and public financing. Information on current agricultural research at the stations which is not financed under the Federal-grant program or through USDA cooperation can be obtained from experiment station directors.

The information given in the series of Federal-grant compilations includes the title and objectives of each Federal-grant project pertaining to the subject given on the cover. The identification of each project gives the department(s) conducting the research, the station number of the project, and the number of the regional project if it is a contributing project.

Relevant regional projects, if any, appear at the end of the compilation. States having projects contributing to regional projects are indicated. The Roman numeral (and capital letter) refer to the location in the summary of the contributing project title and objectives. The States are grouped into four major regions. These are designated NC-North Central, NE-Northeastern, S-Southern, and W-Western. The capital letter "M" following the letters for the region indicates regional marketing projects.



DAIRY HUSBANDRY

Animal Breeding

Alaska

Improvement of Milk Production Through Crossbreeding.

(1) Improve milk production thru crossbreeding and artificial insemination. (2) Compare efficiency of different breeding systems as they relate to crossbreeding.

Dairy Husb. 20

Ark.

The Development of Strains of Dairy Cattle for the Improvement of Dairy Cattle in Arkansas and the Southern Region. To breed new and improved strains of dairy cattle within present purebred breeds that are more highly adapted to and more efficient under the conditions prevailing in Arkansas than are purebred cattle now available.

Anim. Indus. & Vet. Sci. 314 (S-3)

Ga.

The Use of Purebred Jersey and Red Sindhi Cattle to Produce Strains Better Suited to Feed and Climatic Conditions of the Lower Coastal Plain Area of the Southeast. To determine (1) through breeding trials and production tests if the heat tolerance of the Red Sindhi in varying amounts can be used effectively to raise the milk production level of dairy cattle in the lower Coastal Plain area, and (2) the optimum percentage of Red Sindhi breeding to be used for this purpose.

Anim. Indus. 211 (S-3) Coop. ARS

Ill.

Studies of the Inheritance of Production Characteristics of Dairy Cattle by Crossbreeding. To (1) determine possible occurrence of hybrid vigor by crossing two breeds of dairy cattle, with main emphasis on milk and butterfat production, and (2) observe genetic behavior of various other physical characteristics of animals, and making estimates of their heritability.

Dairy Sci. 35-306 (NC-2) Coop. ARS

Ind.

The Improvement of Dairy Cattle Through Crossbreeding. To determine possible heterosis or hybrid vigor in cattle by comparing milk and beef producing qualities of crossbreds from Red Dane, Red Poll, and Milking Shorthorn with purebred animals of same three breeds produced by same sires.

Dairy Husb. 464 (NC-2) Coop. ARS

- Iowa Improvement of Dairy Cattle Through Breeding. To (1) develop and improve techniques for predicting and proving transmitting and producing ability of dairy cattle, (2) determine relative value of inbreeding, crossbreeding, and outbreeding for developing improved strains of dairy cattle, and (3) determine inheritance of production fertility, and physical characters.
Anim. Husb. & Dairy Husb. 1053 (NC-2)
- Kans. Improvement of Dairy Cattle Through Breeding. The Determination of the Frequency of Occurrence and Mode of Inheritance of Selected Physical Characteristics of Dairy Cattle. To determine for each characteristic: (1) frequency of occurrence, (2) mode of inheritance, and (3) relationship between its incidence and productive ability.
Dairy Husb. 285 (NC-2)
- La. Development of Strains of Dairy Cattle Especially Adapted to Southern Conditions. To (1) develop more accurate & efficient measures of heat tolerance in dairy cattle, (2) determine relationship of basic animal characteristics both anatomical and physiological to heat tolerance, and (3) evaluate differences in heat tolerance among various strains within European breeds.
Dairy 607 (S-3) Coop. ARS
- La. Breeding Holstein-Friesians for Adaptability in the Gulf Coast Area. (1) Draw a divergent source of genetic material in Holstein-Friesian breed, from male side, and develop dairy cattle adaptable to area in terms of high milk production and longevity. (2) Compare effectiveness of a continued program of out-breeding and progeny-tested sires with a closed herd.
Dairy 946 (S-3) Coop. ARS
- Mass. Relative Merits of Four Measures of a Dairy Sire's Transmitting Ability. To learn (1) relative merits of 4 measures of a dairy sire's transmitting ability for milk and butterfat production: as daughter-average, daughter-contemporary herd (actual) difference, daughter-contemporary herd ME difference, and adjusted contemporary daughter average.
Dairy & Anim. Sci. 39
- Mich. The Relation of Physiological Development to the Performance of Dairy Cattle. To (1) study mechanism(s) whereby genetic and environmental influences on dairy cattle are expressed; (2) investigate interrelations of various body systems of dairy cattle and relation to productive characteristics; (3) test use of standards of physiological development in improving dairy cattle thru better selection, breeding, feeding and management.
Dairy 59

- Mich. Investigation of Heritable Characteristics of Jersey Cattle.
To investigate certain dairy cattle characteristics such as vigor and longevity, reproduction, growth, development, feed utilization, yield and composition of milk and physiology and/or biochemistry of certain phases of the above characteristics.
Dairy 102 (NC-2) Coop. ARS
- Minn. Identical Twins Versus Calves of Lesser Relation in Dairy Production Research. To (1) determine actual number of identical twins and triplets needed to obtain acceptable results in studies of various dairy cattle characteristics, and (2) explore usefulness of fraternal twins as compared to usefulness of identical pairs.
Dairy Husb. 1610
- Minn. Inheritance in Dairy Cattle. (1) To determine the mode of inheritance of unreported characteristics in cattle. (2) To determine if the reliability of predicting a sire's performance in particular herds can be increased by applying currently suggested methods of adjusting records for within and between herd environment, and (3) derive still more reliable estimates of environment effects on production records.
Dairy Husb. 1616 Coop. ARS
- Minn. Fixation of Milk Production Characteristics by Inbreeding.
To (1) build superior lines of inbred animals in breeds at branch stations participating, with lines to become reservoirs of superior stock, (2) study incrossing, after superior inbred lines are developed, and (3) determine dependability of sire-evaluating methods from work conducted in herds of cooperating dairymen and giving needed data.
Dairy Husb. 1617 (NC-2) Coop. ARS
- Mo. Improvement of Dairy Cattle Through Breeding. a. A Study of Mating Systems and Related Factors as They Influence Production, Reproduction and Physical Characteristics of Dairy Cattle.
To study influence of certain mating systems and related factors on production, reproduction and physical characteristics in dairy cattle.
Dairy Husb. 35 (NC-2)
- Nebr. The Development and Use of Holstein-Friesian Cattle with High Efficiency for Milk and Butterfat Production. To (1) develop dairy cattle that efficiently transform feed into milk and butterfat, (2) develop and improve techniques for predicting the producing and transmitting ability of the cattle, and (3) determine hereditary and environmental relationships of physiological and physical characters in dairy cattle.
Dairy Husb. 318 (NC-2) Coop. ARS

- N. J. A Study of Inbreeding and Outcrossing of a Selected Strain of Holstein-Friesian Cattle. (1) Inbreeding with rigid selection for production of prepotent individuals; (2) topcrossing of outstanding animals of unrelated blood-lines for purpose of introducing desirable genes; (3) outcrossing and incrossing selected inbred animals to show effect of heterosis or hybrid vigor through an increase of heterozygous gene combinations.
Dairy Indus. 127 Coop. ARS
- N. C. Improvement of Dairy Cattle Through Selection. Develop selection methods and means for economic traits as production and heat tolerance to permit maximum genetic improvement from selection. Assess progress realized from selection in herd using artificial insemination with unselected herd.
Anim. Indus. H-28 (S-3)
- Ohio The Effectiveness of Reciprocal Crossing in Blending and Fixing the Desirable Dairy Characteristics of Various Families of Holstein-Friesian Cattle. To study effectiveness of reciprocal crossing and inbreeding in blending and fixing desirable characteristics in families of Holstein cattle from which sires will be chosen for proving subsequent distribution.
Dairy Sci. 67 (NC-2) Coop. ARS
- Ohio The Use of Cattle Twins and Triplets to Study the Relative Influence of Inheritance and Management on Efficiency of Feed Utilization and Production. To determine heritable differences in feed utilization between full sisters compared with results of identical twins.
Dairy Sci. 81
- Ohio Evaluation of Criteria for Breeding, Selecting, and Culling of Dairy Animals. To (1) determine value of "performance analysis" when used as standard for a method of breeding and selection, and (2) determine relative values of numerous criteria employed for culling dairy animals at various ages.
Dairy Sci. 128
- Ohio Influence of Inheritance on the Composition of Milk. To learn (1) difference between cows in production of milk N, (2) if there is a difference in N-production between groups of paternal half sibs, ascribable to inheritance, and (3) portion of total variance represented by this inherited influence if data are adequate.
Dairy Sci. 128-2

- P. R. The Development of a Cow, Adapted to Puerto Rico Which Will Produce Milk Economically Under Tropical Conditions. Animals of the San Sebastian strain will be held until production records have been obtained on their crossbred daughters. Matings with Holstein and Brown Swiss bulls will be continued. Holstein X Native cross will be produced by mating best purebred and grade Holstein cows to Native bull.
Anim. Husb. 93 (S-3)
- R. I. Breeding Experiment with Dairy Cattle. To evaluate influence of inbreeding and outcrossing of Holstein dairy cattle trying to establish genetic factors; influence on total milk production and butterfat percentage; solids-not-fat content of milk; body type and confirmation; growth, persistency and longevity; reproductive efficiency.
Anim. & Dairy Husb. 301
- S. C. The Development of Dairy Cattle Especially Adapted to Southern Conditions. To develop new strains of dairy cattle better adapted to, and more efficient under, the conditions prevailing in the southern states. A program of inbreeding, line breeding, and crossbreeding with intensive selection will be conducted.
Dairy Husb. 7 (S-3)
- S. Dak. Improvement of Dairy Cattle Thru Breeding. (1) Test effect of inbreeding of 2 inbred lines of Holsteins on production, growth and development, reproduction, and type; (2) study effects of possible heterosis from crossing inbred lines; (3) learn effects in reciprocal crosses.
Dairy Husb. 184 (NC-2)
- Tenn. Development of Strains of Dairy Cattle Especially Adapted to Southern Conditions. To develop superior germ plasma and breeding methods for improving Southern dairy herds; to obtain the highest possible herd production with due regard for low unit cost under grazing conditions.
Dairying 92 (S-3) Coop. ARS
- Tex. The Use of European and Zebu Stocks to Produce a Strain of Dairy Cattle Better Suited to the Environmental Conditions of Texas and other Southern Areas. To (1) learn if heat and parasite tolerant qualities of Zebu cattle can combine and fix with high milk producing qualities of proved lines of a European breed, to produce a strain having superior adaptability to southern conditions and thus gain superior capacity and economy of production; (2) learn if crossbred individuals, as such, have superior merit; and (3) develop better practical measures of heat tolerance in dairy cattle.
Dairy Sci., Genet. 642 (S-3) Coop. ARS

- Wash. Inheritance and Environment as Related to Breeding Performances in Dairy Cattle. To determine importance of heredity in causing variation in various measures of breeding efficiency, and outline selection procedure for breeding efficiency, and estimate production days loss because of poor breeding efficiency.
Dairy Sci. 888
- W. Va. The Transmission of Milk and Butterfat Production and Body Conformation by Dairy Sires. To study (1) more reliable methods for selection of young unproven sires; (2) effect on type and production of dairy cows through continued use of proven sires; and (3) inheritance of characteristics.
Dairy Husb. 7 Coop. ARS
- W. Va. Comparison of Young Bulls with Proven Bulls in Artificial Breeding. To (1) learn if young bulls may be selected for butterfat production as effectively as proven bulls; (2) apply and evaluate indexing procedure which has been developed for indexing unproven bulls and/or females that have not lactated.
Dairy Husb. 27
- W. Va. The Use of Type and Production Records as a Basis for a Dairy Cattle Improvement Program. To study (1) genetic portions of the variations in production of milk and butterfat; (2) relation of age and percentage of butterfat in milk; (3) sources of variation in type ratings; and (4) relationship between type classification and milk and butterfat production.
Dairy Husb. 35
- Wis. Evaluation of Systems of Mating in Dairy Cattle. Under a standardized environment, to evaluate various systems of breeding for fixing or concentrating genes for desirable production-characteristics in dairy cattle and to determine how these characteristics are inherited.
Dairy Husb., Genet. 551 (NC-2) Coop. ARS

Diseases

(Mastitis, Milk Fever, Ketosis)
See Part 23 for research concerning
other diseases

- Calif.
(Davis) Bovine Mastitis: Diagnosis, Prevention, and Treatment.
Extend knowledge relative to causation of mastitis (infectious and noninfectious factors); learn ecologic significance of bacterial types commonly associated with mammary gland flora and of less common types of bacteria invading the udder; develop improved methods for detection of mastitic milk; obtain specific information on economics of mastitis; evaluate methods for prevention, prophylaxis, therapy, and control of variety of forms of mastitis, emphasizing the dairy cow.
Vet. Sci. 1064 Coop. ARS
- Calif.
(Davis) The Relation of Dietary Mineral Levels Upon Calcium and Phosphorus Metabolism and the Incidence of Parturient Paresis (Milk Fever) in Dairy Cattle. Learn influence of prepartal dietary mineral intake on Ca, and P metabolism of cow and upon incidence of milk fever. Find palatable ration supplying sufficient nutrients for gestation and that will prevent milk fever, and find management procedures applicable in control.
Anim. Husb., Dairy Indus. 1663 Coop. FES
- Del. Ketosis: Its Prevention and Treatment. To (1) evaluate effectiveness of treatments that have been proposed for ketosis; (2) evaluate preventive measures for ketosis; & (3) investigate effect of treatment of ketotic cows with products found in tri-carboxylic acid cycle for metabolism of carbohydrates.
Anim. & Poultry Indus. 45-AI
- Ind. Ketosis in Sheep and Cattle. To study etiology and basic nature of ketosis and determine means to prevent and treat it under natural and controlled conditions.
Vet. Sci. 726
- Ind. Biochemical Aspects of Milk Fever in Dairy Cattle. To learn (1) factors that control metabolism of Ca and P in dairy cattle and other ruminants, (2) biochemical abnormalities associated with milk fever.
Vet. Sci., Biochem. 841
- Maine Effects of Feeding Vitamin D₂ on Parturient Paresis in Dairy Cattle. (1) Observe and analyze effect(s) of feeding high levels of vitamin D₂ on incidence of parturient paresis of dairy cows. (2) Learn effects of high level feeding of vitamin D₂ on serum Ca and P.
Anim. Indus., Anim. Path., Chem. 107

- Md. Ketosis and Parturient Paresis in Dairy Cows. To obtain additional information on the causes, methods of treatment, and methods of prevention of ketosis and parturient paresis (milk fever).
Dairy Husb. G-37
- Mass. Nocardia Mastitis in the Cow. (1) Make clinical and cultural observations in a dairy herd where naturally occurring udder infection has been found. (2) Attempt to remove infection by chemotherapy.
Vet. Sci. 115
- N. H. Diagnosis and Control of Bovine Mastitis. Learn (1) comparative efficiency of different procedures for diagnosis of mastitis; (2) characteristics and classification of mastitis streptococci and staphylococci; (3) value of new antibiotics or other agents for treatment of non-agalactiae streptococcus mastitis and staphylococcal mastitis; (4) control or prevention of staphylococcal mastitis by immunization of dairy cattle with staphylococcal toxoids and bacterintoxoids.
Bact. 120
- Ohio Mastitis of Cattle. I. Factors Responsible for Variation in Resistance to Mastitis. To acquire additional information on bovine mastitis to serve as basis for developing more efficient methods for prevention, control, and treatment of diseased udders, especially (1) basic factors responsible for variation in susceptibility of udders to infection by mastitis-producing bacteria, (2) determination of microorganisms associated with mastitis and their means of promoting abnormal udder conditions.
Vet. Sci., Dairy Sci. 53 Coop. ARS
- Tenn. Elements of a Program to Control Mastitis in Pen-Type Barns. To determine essential items in effective program to control initiation and spread of mastitis in dairy herd kept in pen-type barns.
Dairying 90
- Wis. Development and Evaluation of Improved Methods for Control of Bovine Mastitis. To (1) on staphylococcal mastitis, a. more accurately identify the staphylococci involved; b. determine whether such staphylococci readily change to a more drug-resistant stage and what effect such change has in the disease and in treatment; and c. determine what materials are more effective in the treatment of staphylococcal mastitis; (2) on mycotic mastitis or cryptococcal udder infection; a. determine more exactly how infection takes place; b. determine which of the present drugs are most effective in treatment of cryptococcal mastitis; and (3) test radioactive materials to determine if these can be employed for a better understanding of the inflammatory process.
Bact., Vet. Sci. 916

Feeding and Management

A. Roughage

- Ala. Productive Performance of Dairy Cows on Some Common Forages. To (1) determine dry matter intake and digestibility of organic matter of several common forages by mature dairy cattle, (2) identify factor(s) that affect consumption and digestibility of forage dry matter, and (3) study lactation stimulating qualities of common forages.
Dairy Husb. 537
- Ala. Galactopoietic Substances in Forage Crops and Other Feeds. To (1) characterize galactopoietic qualities of certain compounds found in relatively high concentration in some dairy feeds; and (2) study effect of substances such as diethyl-stilbestrol and somatotropin on established lactation in low producing and short lactation cows.
Dairy Husb. 556
- Alaska Production, Processing, and Preservation of Alaskan Roughage. To (1) determine feeding value of barn dried hay and silage fed independently and in combination, (2) compare peas and oats silage and barn dried hay with bromegrass silage and barn dried hay, (3) compare feeding value of peas and oats and bromegrass silage made in conventional way with the same crops preserved as baled silage, and (4) develop inexpensive methods of drying hay by forced air, by stacking partially cured hay on a false tunnel.
Agron., Dairy, Engin. 22
- Ariz. The Evaluation and Utilization of Low Quality Roughages as Feed for Livestock in Arizona. To evaluate by chemical analyses, digestibility trials and palatability studies, roughages and by-product feeds present in Arizona and which possess nutrient deficiencies and palatability limitations. Learn effective and economical methods for efficient utilization of these low quality roughages.
Anim. Sci. 388 Coop. ARS
- Ariz. The Relation of the Protein Content to the Digestible Energy and Productive Value of Alfalfa Hay for Dairy Cows. Ascertain relation between protein content, digestible energy, and milk producing capacity of alfalfa hay.
Anim. Sci., Biochem. 448

- Ark. The Influence of Quality of Roughage on Rumen Digestion.
Learn influence of quality of roughage on rumen digestion; use information as a basis for formulating more efficient rations for dairy cattle.
Anim. Indus. & Vet. Sci. 331
- Ark. Investigation of Improved Rations and Roughage Utilization by Dairy Cattle. Learn nutritive value of different kinds and qualities of Arkansas forage for dairy animals. Realize greater utilization of forages in rations by improving quality of forage by better methods of forage preservation, and using rations containing forages in combination with various supplementary materials.
Anim. Indus. & Vet. Sci. 402
- Calif.
(Davis) Fiber and Fibrous Feeds in Nutrition. To (1) study utilization of isolated fiber (cellulose, hemicellulose, lignin and combinations) and fibrous feeds, by rats, pigs, cattle and sheep thru use of ad libitum and paired feedings, N balance and digestibility, (2) make chemical studies on methods of analysis and isolation of fibers, and (3) apply findings to the utilization of forage.
Anim. Husb. 1569
- Colo. An Investigation of Unidentified Nutritional Factors in Alfalfa and Certain Range Plants. To (1) study and identify unidentified nutritional factors in alfalfa; (2) determine manner in which such substances, as stated above, act to supplement or improve rations in which they are included.
Anim. Indus. 176
- Del. Lima Bean Silage. To determine feeding value of lima bean silage for dairy cattle.
Anim. & Poultry Indus. 33-AI
- Del. Nutritive Evaluation of Forages. To determine (1) yield of digestible nutrients of forage crops cut at various stages of maturity and produced under different management procedures; (2) yield of digestible nutrients when various forages are grazed or when various systems of grazing are used; (3) if the rabbit can be used to test the digestibility of forages which are produced to be consumed by other species.
Anim. & Poultry Indus. 42-AI (NE-24)
- Ga. Raising Dairy Heifers on Improved Pastures. To determine the suitability and value of various types of pastures and feeds for growing out dairy heifers.
Anim. Indus. 55

- Ga. Locally Grown Forages in the Dairy Ration. To study (1) characteristics of forages which permit or inhibit stimulation of milk production; (2) effects of pasture management in maintaining and using forage possessing desired characteristics; and (3) need for type needed and effect of supplemental feeds with various forage types and pasture conditions.
Chem., Anim. Indus. 56
- Ga. Techniques for Forage Evaluation with Dairy Cows. To (1) determine measure of quality which are indicators of a forage having ability to influence milk production; (2) investigate relative usefulness of available forage evaluation techniques and make necessary additions or changes to provide suitable techniques; and (3) study such interactions as quantity of forage, animal grazing behavior, forage chemical composition, and nutrient inter-relationships with animal performance.
Anim. Indus. 58 (S-12)
- Ga. The Relative Value of Various Summer and Winter Pastures for Lactating Dairy Cows. To learn (1) relative value of various varieties of oats, Abruzzi rye, and other winter crops; and (2) relative value of Starr millet or other temporary summer forage crops and Coastal Bermuda grass, grown under varying fertility levels.
Anim. Husb. 212 Coop. ARS
- Ga. Effect of Various Methods of Handling, Preserving and Feeding Forages as Silage upon Their Nutritional Value as Dairy Cattle Feed. To (1) evaluate ensiling practices currently used, (2) determine effect of adding preservative on nutritional value and dry matter conservation, (3) develop more adequate analytical procedures to evaluate silages, (4) determine effect of various additives on consumption rates of relatively unpalatable silages, and (5) compare feeding value of hay and silage made from same forage when fed as total or as a supplementary roughage to milking cows.
Dairy Husb. 323
- Hawaii The Conversion of Forages and By-products Grown or Produced in Hawaii into Palatable and Nutritious Silage and the Determination of the Nutritive Value, by Actual Feeding Trials, of Ensilage Produced from the Most Promising Materials and Procedure Developed. To develop, by feeding trials, the best and most economical rations for dairy animals, using the most promising and economical silages of strip cane, legume and nonlegume crops developed under sub-project 1 to as great an extent as possible in replacing imported concentrates.
Anim. Sci. 275

- Ill. Forage Crop and Pasture Management Studies. To study (1) influence of height and frequency of cutting and intensity of grazing on longevity and productivity of forage crops; and (2) effect of individual species on productivity and other characteristics of forage crops and pasture mixtures.
Agron. 15-380
- Ill. Silage Crops for Dairy Cattle. To compare southern varieties of corn with those in this section and prolific with nonprolific types of corn for silage, seeking a type which will combine large yields of dry matter per acre with good keeping qualities and feeding value as silage.
Dairy Sci. 35-309
- Ill. Utilization of Roughages by Dairy Cattle. To provide fundamental information on optimum nutritive conditions for use of forages by dairy cattle and on value of various roughages in feeding dairy cattle.
Dairy Sci. 35-314
- Ill. Pasture Investigations. IV. Intensity of Grazing. To study efficiency of heavy and light grazing on carrying capacity and gains in weight, and (2) effects of these two methods of management on stands, cover, and erosion.
Dixon Spr. 40-304
- Ill. The Effect of Mowing and Fertilization on Pasture Vegetation. To study effect of mowing and fertilization, under grazing conditions, on productivity of desirable vegetation, and prevalence and control of weeds.
Dixon Spr. 40-331
- Ind. The Improvement of Procedures for the Evaluation of Forages. To (1) determine quantitative relationships between clipping procedures and results obtained from grazing trial for measuring output per acre, (2) determine if there are interactions between harvesting methods, both animal and non-animal, and species, strains, and associations of two or more species, (3) explore use of artificial rumen to determine digestibility of nutritionally important components of forages, and (4) study magnitude and nature of experimental errors in various methods of measurement and with units of measure usually recorded in evaluation processes.
Agron., Dairy Husb., Biochem. 744 (NC-11)
- Ind. Factors Influencing the Fermentation and Utilization of Legume-Grass Silage. To determine (1) physical and physiological factors influencing grass silage fermentation, and (2) degree of utilization of selected silages in vitro and in vivo.
Dairy Husb. 771

- Ind. The Effect of Stage of Maturity on Utilization of a Pasture Mixture by Dairy Cattle. To determine effects of stage of maturity of pasture mixture on use by producing dairy cows.
Dairy Husb., Agron. 779
- Ind. Effect of Maturity and Harvesting Procedure on the Chemical Components and Digestibility of Alfalfa and Orchard Grass. To learn effect of: (1) maturity on content of lignin, cellulose, hemicellulose and soluble sugars in alfalfa and orchard grass; (2) cutting, drying, and ensiling of alfalfa and orchard grass on content of lignin, cellulose, hemicellulose and soluble sugars; (3) cutting, drying, and ensiling of alfalfa and orchard grass on solubility of hemicelluloses; (4) cutting, drying, and ensiling of feeding value of alfalfa and orchard grass.
Anim. Husb., Dairy Husb., Agron., Biochem. 915 (NC-25)
- Iowa Effect of Quantity and Quality of Feeds and Feed Accessories on Yield, Composition and Quality of Milk. To (1) determine extent to which one roughage can replace another in dairy cattle ration, (2) compare various methods of preserving roughages as hay or silage and feeding values, (3) compare various feeding intervals and economy of roughage utilization under different housing systems, (4) determine relative feeding values of various concentrates alone and in combinations measured in terms of milk yield, health and reproductive behavior, and (5) determine effect of various feeds alone and in combination on quality of milk and on processing and quality of milk products.
Anim. Husb. & Dairy Husb., Dairy Indus. 1124
- Kans. Fundamental Nutrition Studies of Sorghum Roughages and Grains. II. A Study of the Digestibility of Sorghum Silage. To determine the coefficients of digestibility of sorghum silage when fed alone and in conjunction with a high-protein concentrate.
Anim. Husb., Chem. 222-2
- Kans. Handling and Storage of Hay Crop Silage. To determine (1) most satisfactory methods of placing, leveling, and packing hay crop silage in trench and above ground silos; (2) effect of methods of packing, density, and different types of covering on spoilage in trench and above ground silos.
Agr. Engin. 374 (NC-23)

- Kans. Measures of Efficiency of Roughage Utilization and Nutritional Factors Affecting Roughage Utilization Under Various Controlled Conditions. (1) Devise measures of efficiency of roughage use by dairy cattle. To learn (2) variations existing among cows in ability to use roughage in rations, (3) environmental and physiological factors affecting efficiency of use of roughage by cows, (4) relationship of relative proportions of feedstuffs to efficiency of use of roughage by cows, (5) relationship of level of protein, minerals, and other nutrients on efficiency of use.
Dairy Husb., Econ. 431
- Ky. Utilization of Low-Quality Roughages by Dairy Heifers. To study the value of low quality roughages for dairy heifers and of factors affecting their utilization.
Anim. Husb. 406
- Ky. Effect of Amount of Grain and Quality of Roughage Fed on Growth and Milk Production of Dairy Cattle. Learn how effectively hay, silage and pasture forage produced on hill land can be used to replace most of concentrates normally fed. (2) Evaluate quality of forage produced and learn any correlation existing between its quality and the growth and/or milk production of animals consuming it.
Anim. Husb. 411
- Ky. Comparison and Evaluation of Several Techniques for Measuring the Nutritive Value and Palatability of Pasture Forage for Ruminants. To compare, evaluate, and further perfect the following indicators for learning digestibility and consumption of pasture forage by ruminants; lignin, chromium oxide, fecal nitrogen and forage nitrogen.
Anim. Husb. 1004 (S-12)
- Ky. A Comparison of the Nutritive Values of Orchard Grass, Smooth Bromegrass and Varieties of Tall Fescue. To determine the digestibility, palatability and nutritive value of new varieties of tall fescue in comparison with Ky. 31 fescue, and with orchard grass and smooth bromegrass.
Agron., Anim. Husb. 1005
- Ky. The Effect of Various Kinds of Pasture and of Management Practices on Maintaining High Milk Production. To evaluate various pasture forages and pasture management practices for the maintenance of high milk production.
Anim. Husb., Agron. 1006

- La. Improved Methods of Harvesting, Handling, Curing and Storage of Hay and Silage. To (1) continue studies with duct systems and fan layout for barn hay drying adaptable to the present La. barn, (2) continue developmental work on an economical burner and on safety controls for burning natural gas and butane, (3) make comparative studies handling costs for long hay vs. chopped hay and merits of equipment for handling each when using a barn dryer for finish curing, and (4) continue development work and cost studies on use of forage wagons for drying chopped hay.
Agr. Engin. 571
- La. The Value of Irrigation of Forage Crops for Dairy Animals in Louisiana. Study effects of irrigation on temporary and permanent pasture in terms of: variations in quality and quantity of forage production as measured by animal response; interrelationship among irrigation, crop response, animal response and climate.
Dairy, Agr. Econ. 930
- Maine Roughage Preservation Under Maine Conditions. To (1) study relative preservation of dry matter, protein and carotene in grass silage, barn-cured hay, and field-cured hay on an acre basis, and (2) determine relative milk production obtained from an acre of grassland when forage is preserved as grass silage, barn-cured hay and field cured hay.
Agr. Chem., Anim. Indus. 70
- Mass. Quality in Roughage: I. A Study of the Factors Which Influence Composition, Palatability, and Value for Milk Production of Roughages (Hay and Silage) Grown in Northeastern U. S. II. The Nutritive Evaluation of Forage by Means of Production Trials and Laboratory Tests. (1) Learn value for milk production of forages grown in region, with emphasis on crops of relatively recent introduction in comparison with those indigenous. (2) Learn effect on nutritive value on forage crops of increased use of fertilizers and improved methods of harvesting and storing. (3) Correlate results of milk production trials of crops with chemical analyses and other indicators of forage quality.
Dairy & Anim. Sci. 37 (NE-24) Coop. ARS

- Mich. Producing, Harvesting, Curing and Storing of Legume, Grass, Cereal and Other Hay or Silage of High Protein and High Energy Value. (1) Economically develop ways to preserve crop feeding value, by avoiding losses due to management, poor fermentation, mold, and poor animal acceptance. (2) Promote in silage better fermentation of forages cut at optimal times and in hays better preservation of nutrients. (3) Grow, harvest, and preserve high yields of high quality forages, high in protein, yield, T. D. N., from whatever source or method.
Farm Crops, Dairy, Vet. Med. 48
- Mich. Microbiological and Biochemical Studies of the Fermentation of Forage-Crop Silages. (1) Study microorganisms of the silage process, including biochemical changes. (2) Use findings to develop ways to produce silage of good quality, especially with high protein, high moisture silages.
Microbiol. 828
- Mich. The Nutritive Value of Pastures for Dairy Cattle. (1) Learn nutritive value of existing forage crops for dairy cattle. (2) Study nutritive value of new forage crops. (3) Evaluate various systems of pasture management. (4) Study value of various supplements when fed with pastures varying in quality. Study (5) rates and kinds of grain feeding with various types of pasture; (6) economic treatment of resulting pasture data.
Dairy, Farm Crops, Agr. Chem., Agr. Econ. 857
- Minn. Investigations of the Carbohydrates of Forage Crops with Special Emphasis on the Hemicelluloses. To investigate chemical nature and structure of carbohydrates of forage with emphasis as above. To accomplish by (1) isolating hemicelluloses from bromegrass and from alfalfa, (2) degrading hemicelluloses or derivatives prepared therefrom into components as pentoses and uronic acids and their derivatives; separate and identify latter by chemical and physical properties; determine quantitatively relative proportions of various components of hemicellulose molecules, (3) deduction from objective 2 manner in which components are linked together, thus providing basis for studies of susceptibility of various linkages to cleavage by enzymes of rumen microorganisms.
Biochem., Dairy Husb., Anim. Husb. 1518 (NC-25)

Miss. Milk Production in Relation to Year-Around Grazing Systems.

To (1) determine comparative value of various permanent and temporary grazing crops for milk production measured by grazing performance of dairy cattle, (2) determine cost and economic returns from various crops, (3) evaluate effect of sod seeding winter grazing crops in permanent summer sods on total yearly forage production, distribution of forage production, and on stand of summer crops, and (4) evaluate effect of sod seeding and conventional seed bed preparation on forage production of both a winter and summer temporary grazing crop.

Dairy Husb. HG-1

Miss. A Study of the Comparative Feeding Value of Different

Silages for Milking Dairy Cows. To measure (1) yields per acre of silage crops and costs of production; and (2) value of these silage crops as source of roughage for milking dairy cattle.

Dairy Husb. HG-4

Miss. Effect of Pasture Irrigation on Milk Production Per Acre

and Per Cow. To (1) determine effect of irrigation of a temporary summer grazing crop on carrying capacity, milk production per acre and distribution of grazing, and (2) measure any increase in carrying capacity, milk production per acre, or distribution of forage production of annual winter grazing crops resulting from use of irrigation to insure establishment and increased fall growth.

Dairy Husb. HG-5

Miss. A Comparison of Soiling Versus Grazing Summer Pasture Crops.

To learn (1) use of tall growing summer forage crops harvested by "close folding," rotational grazing, and by soiling, (2) effects of soiling versus grazing on feed consumption and milk production, and (3) interaction of feeding systems with high atmospheric temperatures as measured by feed consumption and milk production.

Dairy Husb. HG-6

Miss. A Study of the Effect of Self-Feeding in a Trench Silo on

the Performance of Milking Dairy Cows. To learn (1) effect of self-feeding from trench silo on feed consumption and milk production, (2) effect of different ways of feeding on amount of spoilage and consumption of silage, (3) number of cows that may be self-fed from silo of given width, (4) effect of self-feeding silage on milk flavor, and (5) efficiency in different types of covers in preventing silage spoiling.

Dairy Husb. HG-10

- Mo. Forage Poisoning Caused by Drought. To (1) develop a quick chemical test to predict if forage would be toxic to farm animals, (2) learn if the toxicity of forage declines after ensiling, and (3) study physiological effects of high nitrate intake on farm animals and investigate ways of counteracting the effects.
Chem. 247
- Mont. The Usage of Pasture Grasses by Dairy Cattle. To determine which type of pasture management will result in (1) greater consumption of total digestible nutrients, (2) greater yield of total digestible nutrients per acre, (3) greater milk and fat production, (4) better flavored milk, and (5) greater milk production economy.
M. S. 908, Dairy Indus. 18
- Nebr. Irrigated Pastures for Dairy Cattle. (1) Determine irrigation requirements for high producing pastures and evaluate factors which may influence amount of water required during each irrigation period, (2) determine if addition of abundant pasturage to a good feeding program would affect breeding efficiency, health, milk production, and length of productive life of dairy cattle, (3) observe effect of use of abundant pasturage upon cost of milk production, (4) determine to what extent usual seasonal variations in Vitamin A value of milk can be affected by use of irrigated pastures, (5) determine what return can be expected in this area, from land used for irrigated pasture, and (6) determine relationship between oxidized flavor in milk and amount of pasture used in the ration.
Dairy Husb., Agr. Engin. 378
- Nebr. Irrigated Bromegrass, Tall Wheatgrass and Intermediate Wheatgrass as a Part of the Ration in Milk Production. To learn (1) comparative value of irrigated bromegrass, tall wheatgrass, and intermediate wheatgrass as measured by: forage yields, production of 4% FCM, cow days of grazing per acre, gain or loss in body weight of animals grazed, (2) number of pasture days of each grass, with supplemental feeds, needed to produce 100 lbs. of milk, and (3) comparative recovery ability after grazing of the three grasses when used for irrigated pastures.
Dairy Husb., Agron. 564
- Nev. High Roughage Feed for Dairy Stock. To learn effect of feeding high roughage diets to milking cows, dry cows, heifers, and calves.
Anim. Husb., Ext. Adm. 20

- N. H. Soluble Substances in Grass and Legume Silage. To learn nature of simpler organic substances in silage, and to compare them with those present in original plant material.
Agr. & Biol. Chem. 42
- N. H. The Hemicellulose of Forage Crops. To determine what differences occur in the hemicelluloses of forage crops (1) in different parts of the plant and (2) as the plant matures.
Agr. & Biol. Chem. 47 Coop. U. S. Regional Pasture Research Lab.
- N. H. Analysis of Forage Samples. To determine amounts of certain organic constituents in samples of grasses, silages, and hays and the changes they undergo during preservation and storage.
Agr. & Biol. Chem. 77 (NE-1)
- N. H. The Maximum Use of Roughage in Feeding Dairy Cattle. Learn (1) how to correct deficiencies in forage crops resulting from heavy fertilization of the soil; (2) effect of frequent feeding of dairy cattle on feed consumption, growth rate and milk production.
Dairy Husb. 126 Coop. U. S. Plant, Soil and Nutr. Lab. Ithaca
- N. J. Heritability of Roughage Consumption and Utilization by Dairy Cattle. (1) Measure influence of factors affecting intake of roughage and learn methods of adjustment or correction for these factors. Learn: (2) repeatability of measurements of roughage consumption over short intervals and in different years; (3) heritability of roughage consumption thru measurements on related animals. (4) Evaluate relation between roughage intake and body measurements. (5) Learn possibility of selecting animals for high roughage consumption at an early age. (6) Consider differences in efficiency of nutrient use and the total intake in a series of similar studies.
Dairy Indus. 152
- N. J. Relationship of Time of Cutting to Digestibility of Hay from Alfalfa and Birdsfoot Trefoil. To determine the digestibility of (1) alfalfa hay cut during the 1/10, 1/2 and full bloom stages; and (2) Birdsfoot Trefoil hay during the 1/10, 1/2 and full bloom stages.
Anim. Husb. 90, Farm Crops 256 (NE-21)

- N.Y.C. The Relationship of Time of Cutting to the Digestibility of Different Forages. Learn (1) digestibility of energy and dry matter of first cuttings of orchard grass, bromegrass, timothy, and alfalfa, (2) digestibility of aftermath growth when cut at various intervals, (3) influence of irrigation on digestibility of forage, (4) effect of N fertilizer on digestibility of grasses, and (5) relationship of leaf and moisture content to digestibility.
Anim. Husb., Agron. 66 (NE-24)
- N.Y.C. A Comparison of Different Intensities of Grazing with Green Crop Feeding of an Improved Pasture Mixture. Compare different intensities of grazing with green crop feeding of an improved pasture mixture by collecting data on milk production per cow, milk production per acre, seasonal carrying capacity, herbage consumption per cow, chemical composition of herbage and its relationship to consumption and digestibility, botanical composition, cost of production.
Anim. Husb., Agron. 68 (NE-24)
- N.Y.C. Maximum Utilization of Forages by Livestock. To study (1) effects of methods of harvesting and storing on nutrient losses and chemical composition of forages; (2) effects of time of cutting on chemical composition and digestibility of forages for various classes of livestock; (3) by comparing the quality and feeding value of forages cut at different stages of growth and handled by different methods for feeding various classes of livestock; (4) value of pastures with and without supplemental feed at various times during grazing season; and (5) effects of high quality forage in reducing need for concentrates.
Anim. Husb. 195 (NE-24)
- N. C. Effect of Fertilization and Management on the Composition and Nutritive Value of Plants Commonly Used for Livestock Feeds. To (1) study effect of different fertilizers on composition of whole plants, soybeans, lespedeza, bull grass, rye grass, and related forage plants, (2) make similar composition studies on various parts of soybean plants and other legumes, (3) study interrelationships of fertilization and maturity on composition of plants, (4) determine at intervals thruout grazing season, changes in chemical composition of grazed forages differently fertilized, and (5) study nutritive characteristics of plants by feeding and metabolism studies with laboratory animals.
Anim. Indus. H-17

- N. C. Biochemical Factors That Affect the Apparent Nutritional Qualities of Forages. (1) Identify and biologically characterize organic compounds in forages having a physiological action. (2) Identify factors in forages causing differences in animal responses associated with digestibility of feed consumed.
Anim. Indus. H-35
- N. C. The Value of Forage Species Alone and in Mixtures Under Various Pasture Management Systems for Lactating Dairy Cows. (1) Measure yield (in milk production and body weight gains) of selected grass, grass-legume, and legume pastures. (2) Study consumption and use of pasture forages by individual cows to evaluate possible differences in performance of individuals.
Anim. Indus. H-132
- N. Dak. The Development of Improved Methods of Forage Crop Evaluation. To study (1) relationship between nutritive value of forages expressed as T. D. N. produced an acre as determined by forage yield and associated chemical analyses, and by measureable products from animals grazing the same forages; and (2) study use of chromogen and chromic oxide techniques of determining intake and digestibility of forages by grazing animals.
Agron., Anim. Husb. 6-12 (NC-11)
- N. Dak. Roughage Utilization by Ruminants. (1) Study the "time factor" in roughage utilization by cattle. (2) Compare the abilities of cattle to utilize good and poor roughages. (3) Investigate effect of different feed supplements, as dried rumen preparations, antibiotics, hormones and other factors on roughage digestibility and utilization by the ruminants.
Anim. Husb., Vet. Sci. 7-2
- Ohio Comparison of Silage and Soilage for Summer Feeding of Dairy Cows. Learn (1) response in milk production to feeding of meadow crop silage vs. field chopped meadow crop; (2) overall advantages and disadvantages of both systems; (3) costs of producing and feeding grass silage to cows in stable compared with feeding field chopped meadow crop.
Dairy Sci., Agron. 34-1
- Ohio Crops and Practices for a Dairy Enterprise. (1) Learn if Sudan grass should have a regular place in forage programs for dairy farms. (2) Compare feeding value of Sudan grass silage with legume-grass silage for lactating dairy cows. (3) Evaluate experimental practice of establishing meadows in corn seeded in wide rows.
Agron., Dairy Sci. 34-3

- Ohio Microbiological Investigations of Silages. To (1) study silage preservatives from viewpoint of their effect on silage microflora, especially fungi; and (2) examine silage microorganisms for antibiotic production.
Bot. 41-5
- Ohio Chemical Analysis of Crops and Silage. To (1) determine chemical composition of crops as ensiled and of silages made in main project or in individual subprojects, (2) relate changes in composition to various procedures or treatments given individual lots of silage, and (3) relate chemical composition to human scoring and palatability to animals.
Dairy Sci. 41-7
- Ohio Feeding Trials with Meadow Crop Silage. To obtain a high quality meadow crop silage and to compare such silage with corn silage in feeding trials with milking cows.
Dairy Sci. 41-10
- Okla. Improving the Utilization of Low Quality Roughages. To determine (1) value of alfalfa ash in utilization of low-quality roughages, (2) mineral deficiencies of roughages, which are improved by addition of alfalfa ash, (3) effective combinations of inorganic elements for more efficient use of low-quality roughages, and (4) practical supplements to supply nutrient deficiencies of low-quality roughages.
Anim. Husb., Agr. Chem. 874
- Oreg. The Nutritive Evaluation of Pasture Grasses by Use of Plant Chromogens. To determine the adaptability of the chromogen method for showing significant differences in digestibility between genotypes of tall fescue.
Agr. Chem., Farm Crops 80-4 (W-40)
- Pa. Methods of Preservation and the Measurement of the Nutritive Values of Forage Crops. A. The Nutritive Value of Grass Silage as Affected by Species and Stage of Maturity. To establish quantitatively the relationship of nutritive value of silage to definite species of forages and to stage of maturity of forages when harvested.
Agron., Anim. Nutr. 1016-A (NE-21)
- Pa. Methods of Preservation and the Measurement of the Nutritive Values of Forage Crops. B. The Type of Storage of Grass Silage as Affecting Nutritive Value (and Losses). To compare effectiveness of upright silo, silo stack and trench silo in retaining nutrients of grass silage, with and without preservatives.
Anim. Nutr. 1016-B

- Pa. Methods of Preservation and the Measurement of the Nutritive Values of Forage Crops. C. The Losses of Nutritive Value of Grass Silage in Tower Silos as Affected by Method of Preservation. To determine losses from silo from seepage and from fermentation and evaluate effectiveness of use of sodium metabisulfite, wilting, and absorbers in reducing losses.
Anim. Nutr., Dairy Sci. 1016-C
- Pa. Methods of Preservation and the Measurement of the Nutritive Values of Forage Crops. D. Fermentation Studies in Grass Silage. To observe changes in grass silage made with various additives in relation to numbers and types of bacteria present, substrate on which they are working, and products of fermentation, various organic acids, mainly propionic, lactic, acetic and butyric acid.
Anim. Nutr., Bact. 1016-D
- Pa. Methods of Preservation and the Measurement of the Nutritive Values of Forage Crops. E. The Nutritive Value of Hay as Affected by the Method of Curing. To determine (1) if it is feasible to bale hay at moisture higher than 20%, which is safe for good keeping in storage, by adding a preservative agent at time of baling or storage; and (2) best method to apply sodium bisulfite at baling to insure uniform distribution thru the bale.
Anim. Nutr., Agron., Engin. 1016-E
- Pa. Evaluation of Grasses and Legumes for Hay, Grass Silage, and Pasture for Dairy Cows. To (1) determine relative persistence and productivity of a number of grass-legume associations for silage followed by summer grazing, and (2) evaluate several management systems on an orchard grass Ladino clover sward with respect to maintenance of legume and productivity of these forage species.
Dairy Sci., Chem., Agron. 1024-A Coop. U. S. Reg. Pasture Research Lab., ARS
- P. R. The Utilization of Grasses, Legumes and Other Forage Crops for Cattle Feeding in Puerto Rico. To determine (1) best grasses, legumes and other forage crops to grow for cattle feeding, (2) best feeding methods, and (3) possibilities of preparing hay and silage under Puerto Rican conditions.
Anim. Husb. 43 (S-12)
- R. I. A Study of the Relationship of the Forage Program to Dairy Farm Organization. To (1) determine relationship of forage production to requirements of the dairy herd; (2) evaluate effects of various feeding systems on milk production on selected farms.
Agr. Econ. 101 Coop. ARS

- R. I. Productivity, Persistence, and Feeding Value of Alfalfa and Ladino Clover as Influenced by Management Differentials. To (1) determine effect of the following factors on forage yield, feeding value and stand persistence of alfalfa and ladino clover when grown alone and with grass: a. stage of growth at time of first harvest in spring; and b. different times of harvesting the last crop in the fall; (2) determine influence of a range of environmental conditions under which these plants are grown on their response to differential cutting treatments; and (3) gain basic information for selecting best combinations of treatments to be used in growing larger plots for actual feeding trials.
Agron., Plant Path., Chem. 215 (NE-21)
- R. I. Zero Pasture as a Summer Maintenance Program for Dairy Cattle. To determine advantages or disadvantages together with economy of maintaining dairy herd under dry lot conditions where forage is chopped and self fed in the lot, including influence on production of 4% fat corrected milk, influence of body weight and general herd health, forage production from pasture when forage is cut, chopped, and dry lot fed instead of grazing. Determine estimated costs involved in labor and machinery use in handling forage.
Agron., Anim. & Dairy Husb., Agr. Econ., Agr. Chem., Plant Physiol. 303
- R. I. Nutritive Evaluation of Forages. Learn nutritive value of forages fed to dairy heifers as affected by stage of maturity; learn nutrient yield of forages fed per unit of land; study effect of stage of plant maturity on cellulose and lignin content.
Agron., Anim. & Dairy Husb., Chem. 304 (NE-24)
- S. C. Roughages for Dairy Cattle. Learn effect of increased rates of fertilization of fescue pasture on palatability, yields and milk production. (2) Evaluate Coastal Bermuda grass for pasture, hay, and silage. (3) Study value of selected plants in a dairy cattle program.
Dairy Husb., Agr. Chem. 103

- S. Dak. Nutritive Value of Grasses and Hays of the Northern Great Plains. To obtain data on composition, digestibility, and productive value of pastures and hays. More specifically: 1. to learn by feeding trials, digestion, and where necessary, metabolism trials, the nutritive value of grasses cut for hay and stored at shooting stage, seed ripe stage, and mature stage, using hay from different parts of the state representing different soil, weather and grass conditions; 2. to store sufficient hay by stacking or other methods that a feeding trial and/or digestion trial can be conducted each year for 5 years on hay stored one year, 2, 3, 4, and 5 years.
Anim. Husb. 120
- S. Dak. Handling, Storage, and Feeding of Grass Silage with Comparisons of Labor Requirements, Costs, Feeding Values, and Losses in Six Different Methods of Storage. D. Chemical Analysis of Grass Silage with Different Methods of Storage. To (1) analyze newly ensiled samples for carotene, protein, ash, crude fiber, ether extract, nitrogen-free extract and moisture, and compare with analysis of samples taken at feeding time from silos; and (2) make moisture determinations on silage as it is weighed out to determine bulk losses at time of feeding.
Biochem. 237-D (NC-23)
- S. Dak. The In Vitro and In Vivo Digestibility of Prairie Hay and Other Forages as Related to the Carbohydrate Components. (1) Study the in vitro digestibility of prairie hay and local forages with emphasis on carbohydrate fractions. (2) Conduct digestion trials in conjunction with in vitro studies in order to correlate differences of carbohydrate fraction content with nutritive value of forages.
Anim. Husb. 293 (NC-25)
- Tenn. A Study of the Poisoning of Cattle Pastured on Fescue. To (1) determine incidence of "fescue poisoning" in Tenn., (2) determine clinical, hematological and post-mortem symptoms of "fescue poisoning," (3) attempt to experimentally reproduce disease and attempt to isolate causative factor, and (4) obtain information on method of reducing or eliminating incidence of "fescue poisoning."
Agron. 44
- Tenn. Evaluation of Forages for Dairy Cattle. Learn (1) relative feeding value of various forage species for growth and milk production; (2) most desirable method of feeding forages.
Dairying 161 Coop. ARS

- Tex. Grazing Management of Perennial and Supplemental Annual Pastures. Learn most profitable system of grazing management on several types of perennial and supplemental annual pastures. Systems to be tested are: moderate continuous grazing, heavy continuous, and rotational grazing.
Anim. Husb., Agron. 1019
- Vt. Economic Analysis of Roughage Programs of Dairy Farms.
To (1) determine to what extent various forage programs have proven most profitable for dairy farmers with different soil resources; and (2) obtain current information on quantities and value of roughage and concentrates and other items used in producing milk, and examine amount of variation in dairy farmers' income that may be attributed to different roughage programs.
Agr. Econ. 20
- Vt. The Relationship of Date of Cutting to the Nutritive Value of Various Forages. Learn digestibility of energy, and N (1) of 1st-cuttings of various mixtures grown in State when harvested on June 9 and July 15; (2) of aftermath growth when cut at various intervals. (3) Further investigate use of chromium oxide as an indicator of digestibility of hays and silages consumed by lactating dairy cows. (4) Learn effect of fertilization on digestibility of energy, and N of forages cut at various stages of growth.
Anim. & Dairy Husb. 66 (NE-24)
- Va. The Determination of Certain Minor Elements in Forages, Feedstuffs and Selected Animal Tissues. (1) Determine Co, Cu, Mn, Mo, and Zn in certain forage plants. (2) Make copper analysis of feedstuffs and animal tissues and other materials used in feeding of animals on Virginia forages low in Cu. (3) Learn Cu and Mo concentrations of tissues, rations and excreta of lab. rats in connection with Cu, Mo, S relationships.
Biochem. & Nutr., Dairy Sci., Biol. 86012
- Va. Yield and Herbage Quality Under Two Systems of Grazing.
To measure quality and quantity of herbage production under continuous grazing of one pasture vs. grazing program where several mixtures in different fields are grazed in rotation.
Anim. Husb., Agron. 86037

- Va. The Evaluation of Forages with Dairy Cattle. To learn how state of growth or time of cutting affects quality and/or feeding value of pasture, silage, hay and soiling. Following will be included: intake, palatability, and digestibility effects; balance of nutrient intake, effect on certain blood constituents (carotene, hemoglobin, non-protein N), milk production, body-weight changes, and growth rate; effect of rumination rate, respiration rate, heart rate, and body temperature.
Dairy Sci., Biochem., Agron. 86077
- W. Va. Measuring the Nutritive Value of Forage Crops. Develop chemical and biological techniques for determination of nutritive value of forage crops.
Agr. Biochem., Agron. & Genet., Anim. Husb. 46 (NE-24)
- Wis. Yields of Dry Matter and Crude Protein from Several Forage Crops of Importance to Dairy Cattle. To (1) grow a number of annual, biennial, and perennial forage crops of current importance in Wisconsin at several levels of fertility ranging from moderate to very high, (2) sample these crops at various stages of maturity, (3) learn yields of dry matter and crude protein from each.
Agron. 345
- Wis. Yields from Forage Crops under Different Systems of Dairy Cattle Feeding. To compare net returns from forage crops fed to dairy cows under different systems of handling and feeding, particularly during summer months.
Agron., Econ., Dairy Husb., Engin., Soils 910 Coop. ARS
- Wyo. Testing Grasses and Legumes for Forage Production and Palatability. To test (1) varieties and strains of alfalfa and grass for forage production and other desirable characteristics, (2) certain grasses for relative palatability and to learn if applications of N to soil will affect relative palatability, (3) effect of geographic strains and certain soil conditions on palatability of a single grass species.
Agron. 585

Feeding and Management

B. Concentrates, Vitamins, Minerals,
Antibiotics, etc.

- Ariz. Mobilization and Absorption of Calcium and Phosphorus by Cattle. Study (1) methods of increasing intestinal absorption of P; (2) ability of parathyroidectomized and mature cows to mobilize Ca; (3) secretory status of parathyroid glands of cows with milk fever.
Dairy Sci., Agr. Biochem. 446
- Ariz. The Vitamin A and Carotenoid Content of the Liver and Blood Plasma of Dairy Cattle Showing Vitamin A Deficiency Symptoms. Learn levels of carotenoids and vitamin A in the liver and blood plasma of cows and calves showing symptoms of vitamin A deficiency and animals not showing symptoms in same herd; learn carotenoid content of forages fed these same cattle.
Dairy Sci., Agr. Biochem. 447
- Calif.
(Davis) Studies of Mineral Metabolism in Animals. I. Calcium-Phosphate Relations. II. Iodine Metabolism in Cattle. III. Mineral Deficiencies on Range Lands -- Calcium, Manganese, Cobalt, Sulfur, and Other Minerals.
Anim. Husb. 938
- Fla. Mineral Requirements of Cattle. To investigate role of mineral elements in nutrition of cattle, with particular emphasis on interrelationships of elements in development of nutritional abnormalities observed in Florida.
Anim. Husb. & Nutr., Dairy Sci. 133
- Fla. Investigation of Mineral Nutrition Problems of Livestock Through the Use of Laboratory Animals. To investigate mineral nutrition problems, including mineral interrelationships that occur in farm livestock, using suitable laboratory animals.
Anim. Husb. & Nutr. 346
- Fla. Transfer of Mineral Elements Through the Placenta and Their Distribution in the Fetus. To determine rate and extent of placental transfer of selected mineral elements and to determine distribution of those elements in the fetus.
Anim. Husb. & Nutr. 566

- Ga. A Study of Calcium Metabolism in Dairy Cattle. (1) Find practical way of preventing negative Ca balances in lactating cows and if this improves animals' production and productive life. (2) Approach Ca metabolism by experimentation with parathyroid secretion and its relation to Ca assimilation, deposition, reabsorption, excretion and mammary development and secretion. (3) Learn more fully the relation between Ca metabolism and milk fever.
Dairy Husb. 339
- Hawaii Studies to Determine the Nutritive Value and Metabolism of Products and By-Products of Hawaiian Industry. Seek information relative to value of products and by-products of Hawaiian agriculture and industry for livestock feeding with major emphasis on use of molasses, sugar cane bagasse and pineapple by-products by chemical analysis of feeds to be used; learn digestibility; feeding trials to assess production response accompanied by: studies of nutrient absorption, nutrient and metabolite levels in blood and urine, metabolism and its relation to requirements for specific nutrients.
Anim. Sci. 269
- Ky. Low Protein Rations With and Without Non-Protein Nitrogen Supplements for Dairy Cows. To evaluate the present protein standards of feeding lactating dairy cows, including newer types of nitrogenous feeds such as urea, dicyandiamide and various ammoniated products.
Anim. Husb. 407
- Miss. The Effect of Different Levels of Concentrate Feeding on Milk Production. To determine most economical level of grain feeding to dairy cows in Mississippi.
Dairy Husb. HG-9
- Mo. The Mineral Nutrition of Ruminants. To (1) reevaluate qualitative and quantitative mineral requirements of ruminants, (2) learn mineral element(s) or combination of elements in alfalfa ash which is (are) effective in stimulating appetite and improving performance of cattle fed low quality roughage.
Anim. Husb. 248
- Nebr. The Effect of Adding Stilbestrol to a High Roughage Ration on Growth, Reproduction and Lactation of Dairy Heifers. Learn effect of feeding diethylstilbestrol with a high roughage ration on growth, reproduction, lactation, feed required per 100# of gain and 100# of milk produced.
Dairy Husb. 586

- N. C. Investigations on the Metabolism of Minerals by Ruminants.
I. The Effects of Variations in the Calcium: Phosphorus Ratio
on Cattle and Sheep. 1. Learn optimum CA: P ratio or the
range over which the ratio may vary without untoward effects
on cattle performance. 2. Study effects of variations in
dietary Ca and P on trace element metabolism of ruminants.
Anim. Indus. H-148
- Okla. The Correlation of Vitamin A Liver Stores with Plasma
Vitamin A in Cattle. Study correlation of liver and plasma
vitamin A levels in cows during reproduction and lactation;
correlate liver stores and plasma levels and vitamin A and
carotene with the amount in the diet and milk.
Anim. Husb., Agr. Chem. 747
- Okla. The Availability to Ruminant Animals of Phosphorus in
Various Phosphorus Supplements. To learn (1) relationship
between P intake and gain in weight, bone calcification,
inorganic P level of blood plasma, true digestibility of P
and balance of P in steer calves; and (2) availability to
steer calves of P contained in certain mineral supplements
and feeds.
Anim. Husb., Chem. 880
- Oreg. Carotene and Vitamin A Utilization and Storage in Dairy
Cattle of Different Nutritional Backgrounds as Determined by
Analyses of Liver Obtained Through Biopsy, Milk Fat and
Blood. To study (1) influence of natural feedstuffs through
the year on carotene and vitamin A content of blood, milk and
liver of Jersey and Holstein cows, and (2) effect of carotene
and vitamin A history of dams and grand dams on use and
storage of vitamin A and carotene in calves.
Agr. Chem., Dairying, Vet. Med. 13-10
- Oreg. The Role of Minor Elements in Animal Nutrition. To deter-
mine the distribution of "trace" or "minor" elements of impor-
tance in animal nutrition and livestock disorders. To apply
this information to problems in the fields of nutrition and
livestock production.
Agr. Chem., Anim. Husb. 154
- P. R. The Utilization of Concentrates in the Feeding of Livestock
in Puerto Rico. To determine most economical quantities and
qualities of concentrate feeds or grain mixtures that may be
used satisfactorily for milk production.
Anim. Husb. 44

S. Dak.

Selenium Poisoning. To (1) obtain basic information on biochemistry and physiology of selenium toxicity in animals; (2) determine with lab animals methods to counteract toxicity of selenium; (3) adapt information now available and that obtained thru objective 2 on factors which alleviate selenium toxicity in small animals for use in farm animals.

Biochem. 19-R

Tenn.

Mineral Metabolism in Animals. I. Absorption, Distribution, and Physiological Behavior of Calcium and Phosphorus in Farm Animals. To (1) determine the normal distribution of these mineral isotopes administered by the various routes to cattle, and to study thereby in detail the normal absorption, utilization and skeletal metabolism of selected minerals in these animals; (2) measure endogenous losses of calcium and phosphorus and from these values determine maintenance requirements in the various species as a function of age; (3) determine the biological availability of calcium and phosphorus from the common dietary sources of ruminants and simple stomached animals; and to study the effects of certain factors such as phytates, oxalates, ration, composition, etc. upon the availability; and (4) apply radioisotope procedures concurrently with accepted indicator methods for the differential measurements of animal response to various dietary treatments.

Anim. Husb., Vet. Sci. 63 Coop. AEC

Tenn.

Mineral Metabolism in Animals. II. Interrelationships of Calcium and Phosphorus with Vitamins, Minerals, Hormones, and Other Factors. To (1) investigate and separate effect of metabolism of calcium and P certain important factors which are known to influence their behavior in the animal body, and (2) study such elements and substances as are known to induce abnormal bone metabolism that are important for clarification of normal mechanisms and to aid in explanation of toxicological properties.

Anim. Husb., Vet. Sci. 64 Coop. AEC

Tenn.

Feeding Thyroidally Active Materials to Dairy Cows. Learn (1) effect of extended periods of thyroxine feeding to cows in successive lactations; (2) optimum daily dose of thyroxine for stimulating milk yields; (3) physiological effects of thyroxine feeding as shown by plasma PBI.

Dairying 88

Utah

Fluorosis in Plants and Animals. To learn (1) extent and distribution of fluorosis in plants and animals in selected areas of Utah; (2) if increased levels of grain, Ca, and P, and aluminum salts will help to alleviate symptoms of fluorosis in dairy cattle; (3) if dairy cattle can be raised in areas where fluorides are in atmosphere; (4) by survey on animals if fluorosis in animals is increasing or decreasing, (5) toxic levels of fluorides for young dairy cattle; (6) by autopsies and histopathological studies on animals with varying degrees of fluorosis.

Chem., Anim. Husb., Dairy Indus., Bot., Plant Path. 364
(W-39)

Wis.

Mineral Metabolism and Mineral Requirements of Animals.

To study (1) the effect of mineral supplements of various kinds on animals fed low lime rations, (2) the role of inorganic compounds containing such elements as iron, copper, nickel, cobalt, zinc, and manganese, and (3) factors responsible for nutritional anemia and effect of various inorganic elements and compounds in correcting such anemias. Fundamental investigations on the phenomena of hemoglobin building on the body will be continued.

Biochem., Anim. Husb. 8

Wis.

The Effect of Vitamins and Other Organic Nutrients on the Growth, Milk Production and Reproduction of Animals. To determine factors concerned with the adequate nutrition of farm animals as related to Wisconsin conditions.

Biochem., Anim. Husb. 10

Feeding and Management

C. Metabolism Studies, Management

Alaska

The Effect of Two Management Systems on the Growth, Development, Feed Consumption and Production of the Hieifers Raised in Alaska. Learn cost of wintering hieifers in an open shed as compared to warm housing and the effect on their growth, development, feed consumption, and milk production.

Anim. Husb. 62

Ariz.

The Effect on Milk Production of Feeding a Complete Pelleted Ration to Dairy Cows. Learn effect of feeding a complete, pelleted ration to dairy cattle on milk production and the adaptability of the pellet to self-feeding techniques.

Dairy Sci. 423

Calif.
(Davis)

Studies on the Energy Transformation in Organisms, Especially in Farm Animals. To study energy transformation in animals as (1) quantitative deficient food; (2) environmental conditions of body size; and (3) utilization of food energy.

Anim. Husb. 940

Hawaii

Feeding Experiments with Livestock Designed to More Fully Determine the Possibilities and Proper Use of Locally Available By-Products. To more fully utilize by-products available in Hawaii.

Anim. Sci. 265

Ill.

The Energy Nutrition and Energy Biochemistry of the Ruminant. Study the actual energy sources being used by ruminant animals in order to try to develop methods of improving the efficiency of energy utilization.

Anim. Sci. 20-358

Kans.

The Effects of Feeding and Management Practices on the Nutrition and Physiology of the Pregnant Cow and of the Young Calf. To determine the effects of (1) feeding and management practices on occurrence of mammary edema and other physiological disturbances during stages of advanced gestation and early lactation, (2) level of nutrients in ration of pregnant cow on transfer of nutrients to her colostrum, and to newborn calf, (3) digestion and absorption of nutrients from colostrum by newborn calf, and (4) relationship of antibody content of colostrum, milk and blood of cow to that of her calf.

Bact., Dairy Husb., Chem. 240

- Kans. Economic Relationships of Hay and Concentrate Consumption to Milk Production. (1) Estimate productivity coefficients for hay, concentrates, and cow ability. Learn (2) marginal productivity of feed inputs; and (3) marginal rates of substitution between hay and concentrates for specified production.
Econ., Dairy Husb. 470
- La. The Effect of Certain Management Practices and Controlled Stress on the Physiological Response of Dairy Animals. To determine (1) value of succulent feeds, such as silage and irrigated pasture, in maintaining high milk production during summer, and (2) effect of various management practices on physiological response of dairy animals when subjected to controlled temperatures ranging from 60°F to 105°F at controlled humidity.
Dairy 540 Coop. ARS
- Mich. The Nutritive Requirement of Dairy Cattle for Growth and Lactation. 1. Study effect of nutrient intake on production of milk, growth, and efficiency feed conversion. 2. Transform information gained from rumen microorganism studies into nutritive allowances for milking and growing dairy cattle.
Dairy, Agr. Chem. 853
- Minn. The Effect of Maternal Nutrition on Development, Growth and Performance of the Young. Small laboratory animals will be used for initial studies. Dietary restrictions of mothers in caloric, protein, mineral and vitamin intake, as well as production of acute temporary vitamin deficiencies by means of vitamin analogues, will be used as experimental techniques. The young will be studied with respect to birth weight, anatomical malformations, vitamin content of tissues, viability, growth and development. Similar observations will be made with animals fed the best diets that can be devised. Chemical studies will be made on the blood and tissues of mothers and young to study relation between maternal and fetal composition under various conditions.
Agr. Biochem. 1514
- Minn. The Relationship of the Previous Nutritional History to Production Efficiency in Dairy Cattle. (1) Devise methods to measure the nutritional state of an animal in terms of form and function. (2) Measure and record differences in nutritional states of animals which are on different rations periodically from birth thru periods of gestation and lactation using identical twins. (3) The prime measurement to be made is the efficiency of conversion of feedstuff into body growth or milk production.
Dairy Husb. 1621

- Mo. Environmental Requirements for Farm Animal Shelters.
d. Design and Development of a Partitional Calorimeter for
Cattle. To use all available engineering and physical data
to develop a design for a partitional calorimeter capable
of containing one large animal such as a dairy cow.
Agr. Engin., Dairy Husb. 136-d (NC-23) Coop. ARS
- Nebr. The Relationship Between Changes in Certain Blood
Characters and Physiologic Function (Growth Rate, Productive
Ability and Feed Consumption). To (1) determine changes in
levels of certain constituents of blood with age, growth,
pregnancy and productive ability, and (2) if significant
relationships exist between blood constituent levels and
physiologic function, to a. study prediction value of these
blood constituent levels to future productive ability, and
b. use physiological range of blood constituents as criterion
for judging optimal dosage in administration of hormones,
antibodies, etc. to obtain greater efficiency of productive
abilities of animals and without serious detriment to the
animal.
Dairy Husb. 452
- N. H. The Nutritive Evaluation of Forage for Dairy Cattle.
(1) Improve and standardize procedures for nutritive evaluation
of forages for dairy cattle. (2) Compare values for energy as
net, digestible, metabolizable and compare digestible dry
matter and total digestible nutrients determined on same forage.
(3) Learn effect of stage of maturity and level of N fertiliza-
tion on nutritive value of certain forages. (4) Learn effect
of variables on nutritive value of acre yield. (5) Learn
effect of variables on excretion of certain B complex vitamins.
Dairy Husb., Agr. & Biol. Chem. 102 (NE-24)
- N. J. Nutritional Studies on the Growth and Development of
Dairy Cattle. Determination of the Digestibility of Grass
Hays Grown with Various Levels of Nitrogen Fertilization.
To learn (1) digestible energy and digestibility of various
nutrients of grass hays grown under various levels of N
fertilization; (2) N balance on dairy heifers fed grass
hays grown under various levels of N fertilization; (3) diges-
tible energy and digestibility of various nutrients of high
protein grass hays relative to that of lower protein grass
hays where N content of latter is made equal to the former by
urea supplements. (4) Thru use of artificial rumen and similar
"in vitro" techniques study utilization of nutritionally impor-
tant components of hays as listed above.
Dairy Indus., Anim. Husb. 148

- N.Y.C. The Nutritional Requirements of Herbivora as Studied by Purified Diet Methods. To determine the nature of the deficiency in purified diets and devise a diet of purified ingredients that will sustain satisfactory growth, reproduction, and lactation in herbivorous animals.
Anim. Husb. 59
- N. C. A Study of the Essentials of the Ruminant Diet. To investigate by means of the purified-diet method: (1) basic nutrient requirements of ruminant, and (2) nutritional and physical interrelationships of diet.
Anim. Indus. H-29
- Ohio Improvement of the Method for Determining the Crude Fiber and Nitrogen-Free Extract (N.F.E.) of Feeds. To improve crude fiber method of analysis so that the crude fiber determination will be a measure of the fraction of the feed that is the undigestible carbohydrate fraction and the N. F. E. (by difference) is the readily digestible fraction.
Anim. Sci. 5
- Ohio Factors that Affect Utilization of Nitrogen from Protein and Non-Protein Nitrogen Sources in Dairy Cattle. To study (1) losses of N in the urine of growing and lactating dairy cattle fed different levels and sources of protein and non-protein N including urea, and (2) effects of various sources and amounts of energy and effects of frequency of concentrate feeding on efficiency of N use.
Dairy Sci. 129
- Ohio The In Vitro Digestibility of Cellulose From Various Sources and the Effect of Lignification Thereon. To (1) learn the digestibility (in vitro) of cellulose and cellulose-containing crude fiber fractions isolated from feedstuffs (corn cobs, oat hulls, wheat bran, alfalfa leaves and stems, timothy, and straws), (2) try to assess effect of lignification of materials on digestibility of cellulose in these materials.
Anim. Sci. 132 (NC-25)
- Pa. Effect of Feeding Various Levels and Kinds of Protein to Dairy Cattle. To (1) investigate relationship between level and quality of protein intake and use of complete ration, and (2) study effect of over-feeding of protein to dairy cows in relation to milk production, body weight change, and observable changes in health.
Dairy Sci. 1155-D

- P. R. Fundamental Studies in the Nutrition and Metabolism of the Dairy Cow in Puerto Rico. To (1) determine caloric and energy values of our forages and dairy rations, (2) explain apparent inefficient use of nutrients by lactating cows, and (3) discover nutritive factors that limit our milk production.
Anim. Husb. 46
- S. C. Factors Affecting Feed Utilization by Ruminants. To learn (1) value of feed supplements to pasture and other roughages, (2) use of urea and other organic nitrogenous compounds as additives to molasses, and other farm grown carbohydrate feeds.
Dairy Husb., Chem. 93
- Tenn. Importance of the Dry Period and Management of Dairy Cows During the Dry Period. (1) Learn importance of dry period when cows are kept in good nutritional and physical condition before calving. (2) Compare effects upon production of different feeding and management practices which are followed during dry period.
Dairying 151
- Tex. An Evaluation of Animal and Vegetable Protein Feeds With Respect to Chemical Composition and Feeding Value. To (1) determine cystine content of farm feeds, (2) determine tyrosine content of farm feeds, and (3) improve microbiological methods for determination of amino acids.
Biochem. & Nutr., Anim. Husb. 521
- Vt. Microbial Protein for Feed Supplements. (1) Investigate micro-organisms for their ability to synthesize high quality protein which might be used as feed additives. (2) Learn if strain variability exists among micro-organisms with respect to ability to synthesize an essential amino acid, such as lysine.
Biochem. 11
- Va. Evaluation of Available Techniques and the Development of New Techniques for Measuring Forage Utilization with Livestock. To learn (1) reliability of chromium oxide and plant chromogens as indicators to measure dry matter intake and use by dairy animals; (2) use of inert chemical compounds as indicators in digestibility studies to simplify analytical procedures; and (3) dry matter intake and digestibility of various plant species grown for pasture and cured forages for production of milk.
Biochem. & Nutr., Dairy Sci., Anim. Husb. 86030 (S-12)

W. Va. The Effects of Early Versus Delayed Breeding of Dairy Heifers. Measure effect of age and weight of heifers at time of breeding on mature weight, milk production, and economy of production.

Dairy Husb. 107

Wis. Development of New Procedures for the Analysis of Dairy Herd Records. To (1) program a completely automatic procedure for calculating and analyzing dairy production records. (2) Analyze available herd records by statistical methods and to correlate, if possible, environmental conditions and production.

Dairy Husb. 1023 Coop. ARS

Feeding and Management

D. Calves

- Alaska Raising Dairy Calves. To develop efficient rations and methods of raising dairy calves in Alaska.
Anim. Husb. 18
- Colo. Systems of Marketing Dairy Bull Calves. Study most economical method of marketing dairy bull calves: compare returns from whole milk fed against skimmilk, hay, and grain fed veal calves; compare returns from veal production with returns from Holstein steers; compare quality of milk fed veal with veal produced on skimmilk, hay and grain.
Anim. Indus., Dairy Indus. 185
- Conn.
(Storrs) The Development of Adequate Experimental Methods for Determining the Nutritive Requirements of the Young Calf. To evaluate and improve (1) efficiency and sensitivity of various experimental designs which might be used in calf studies, and (2) various biochemical methods to learn vitamin A in calf blood and other tissues, and use these methods to learn vitamin A status of the calf.
Anim. Indus., Anim. Dis. 139
- Fla. Medicated Feeds for Dairy Calves. Learn effects of low-level feeding of various combinations of anti-bacterial substances alone and with orotic acid and methionine on the growth and general health of young calves.
Dairy Sci. 781
- Ga. The Nutritional Requirements of Dairy Calves. To (1) determine extent to which pasture forage may be used as a component of rations of young dairy calves, (2) investigate any special problems in management that may accompany the use of pasture forage, (3) determine kind and quantity of concentrates required to insure proper growth and development of calves on pasture, and (4) determine quantity of pasture needed to insure success from this feeding program.
Anim. Husb. 57

- Ga. A Comparison of Systems of Feeding and Management of Dairy Calves for Herd Replacements under Georgia Conditions. To learn (1) effects and importance of increasing energy content of calf starters thru use of various fats and combinations of fats on growth, health, feed consumption, palatability and digestibility, (2) effects of various materials which might improve or affect palatability, (3) earliest age starter can be replaced by older animal type concentrate mixtures, and (4) growing effect of Coastal Bermuda grass hay.
Dairy Husb. 324
- Idaho Reconstituted Non-Fat Dry Milk Solids Supplemented with Aureomycin and Vitamins A and D for Feeding Dairy Calves. To determine (1) if reconstituted non-fat dry milk solids supplemented with vitamins A and D and aureomycin are satisfactory for raising dairy calves under Idaho conditions, and (2) length of time it is necessary to feed reconstituted non-fat dry milk solids to obtain normal growth if it can be used satisfactorily.
Dairy Husb. 246
- Ind. Nutrition and Management of Young Dairy Calves. (1) Learn effect of age of calf on utilization of feedstuffs from various sources. (2) Evaluate use of enzymes and other additives for improving utilization of feeds. (3) Develop improved rearing systems.
Dairy Husb. 896
- Iowa A Study of the Prenatal and Postnatal Nutrition of the Calf. Study (1) postnatal nutrition to provide fundamental information relative to digestion and metabolism of various feed nutrients and to facilitate formulation of rations which are nutritionally adequate, practical and economical; (2) relationship between nutrition of young bovine and certain physiological disorders. (3) Examine chemically various normal and abnormal metabolites in bovine. (4) Study survival and performance of young animal as related to nutrition of dam during pregnancy.
Anim. Husb. & Dairy Husb., Chem. 1324
- Kans. The Effects of Feeding and Management Practices on the Nutrition and Physiology of the Young Calf. To determine the effects of (1) level of nutrients in ration of pregnant cow on transfer of nutrients to her colostrum, and to newborn calf, (2) digestion and absorption of nutrients from colostrum by newborn calf, and (3) relationship of antibody content of colostrum, milk and blood of cow to that of her calf.
Bact., Dairy Husb., Chem. 240

- Kans. Factors Affecting the Nutrition of Dairy Calves. To (1) develop formulas for milk replacements and starters which will more adequately nourish dairy calves, (2) study systems of feeding including hay in starter to encourage greater roughage consumption, reduce cost of feeding and permit simplified ad libitum feeding of starter, (3) study effect of known nutrients such as trace minerals and unknown nutrient factors such as grass juice factor on growth and well-being, (4) study methods of using antibiotics and their effect on nutrient requirements, and (5) study effect of incorporating in calf feeds, antibodies from bovine blood and surplus colostrum.
Dairy Husb. 389
- Ky. The Influence of Newer Nutritional Factors on the Nutritional Requirements of Young Calves for Normal and Fast Growth. To evaluate and re-evaluate nutritional needs of young dairy calves in light of some of the newer nutritional factors.
Anim. Husb. 403
- Maine Feeding Antibiotics to Dairy Calves. To determine the effects of feeding antibiotics to dairy calves
Anim. Indus. 66
- Mich. Influence of Various Nutritional Factors on the Growth and Metabolism of the Young Dairy Calf. Learn (1) nutritive value of feeds commonly used as components of calf feeds; (2) value of "newer-nutritional factors" in calf feeds. Study (3) development of new calf feeds which are more efficient from a nutrient use and economy viewpoint than available feeds; (4) influence of one nutrient on another and interrelationship between nutrients.
Dairy, Agr. Chem. 854
- Minn. Nutritive Requirements of Dairy Calves. To determine (1) amount of each nutritional substance required by the calf for optimum nutrition, (2) physiological disturbances resulting from deficiency of these nutrients, (3) best means of supplying all the essential nutrients under practical feeding conditions, and (4) time of development of the rumen, synthesis of nutrients and factors favoring this development.
Dairy Husb. 1510 & 1609
- Mo. Changes in the Physical Structure of Roughages During Growth and Digestion.
Physiol. 250 (NC-25)

- Mo. The Influence of Diet on the Growth and Development of Calves and Older Dairy Animals. To determine influence of diet with special reference to milk replacers and starter rations, specific mode of action of antibiotics, and to compare later growth and development of animals on the experimental rations with similar animals under normal feeding and management conditions.
Dairy Husb. 55
- Mont. Nutritional Muscular Dystrophy in Calves. To (1) determine if muscular dystrophy can be induced in calves by avitaminosis E, (2) determine alpha-tocopherol content of milk from cows of beef breeds in herds where calves are affected annually with muscular dystrophy, and (3) observe and obtain data on development of spontaneous muscular dystrophy in calves.
Vet. Res. 53, MS 905
- N. C. Factors Affecting the Economy and Efficiency of Feeding Young Dairy Calves. (1) Develop means for more effective and economical feeding. (2) Study relationships of dry calf starter characteristics to various kinds and forms of roughages to provide necessary nutrients more economically.
Anim. Indus. H-19 Coop. ARS
- N. C. The Effect of Management and Housing Upon Growth and Health of Dairy Calves. To study relative merits of various systems of housing and related management practices for raising young dairy calves, as judged by growth, efficiency of gain, and general health with due consideration to economical aspects.
Anim. Indus. H-22
- Ohio Further Studies on Fundamental Factors Affecting Roughage Utilization, Early Establishment of Rumen Function, and Health of Dairy Calves. To study ways in which not only hay but various pastures and silages can be supplemented and utilized to best advantage by calves. To study further the factors involved in establishment of rumen organisms in calves. To study physical characteristics of various milk replacement formula in relation to use and health.
Dairy Sci., Vet. Sci. 51
- Pa. The Etiology of Calf Scours and an Evaluation of Control Measures. To determine (1) etiology of calf scours by bacteriological and chemical analysis of contents of digestive tracts of calves, (2) efficiency of certain biological and chemotherapeutic agents, and (3) role of management in control of scours.
Vet. Sci., Dairy Sci. 1038

- Pa. The Value of Grass Silage in the Diet of the Young Dairy Calf. To (1) determine feasibility of feeding high quality grass silage as only roughage to young dairy calf, (2) study effect of supplementing hay with grass silage in ration of young calves, and (3) investigate feeding maximum levels of roughage to calves while restricting concentrate intake.
Dairy Sci. 1155-C
- Pa. The Relation Between Age and Nutritional Requirements of Dairy Calves. To study (1) changing nutritional needs of the dairy calf, and (2) rumen development in the calf.
Dairy Sci. 1155-E
- Tenn. Raising Dairy Calves. Learn factors essential for satisfactory and efficient raising of dairy calves while using a minimum of marketable whole milk and limiting the milk feeding period.
Dairying, Anim. Husb. 150
- Va. Protein Requirement and the Relation of Energy and Minerals to Protein Metabolism of the Young Dairy Calf. (1) Learn minimum protein need of dairy calf from birth to six months. (2) Study relationship of energy and minerals to protein metabolism in the calf.
Dairy Sci., Biochem. & Nutr. 86097

Housing and Equipment
See Part 3 for additional
research in Agr. Engin.

- Minn. Labor Saving Methods in Handling and Feeding Silage and Soiling Crops to Dairy Cattle in Outside Feed Lots. To (1) develop a system of feeding silage in outside feed lot for dairy cattle under loose housing system of management with these features: a. silo unloading equipment, b. conveying and distributing mechanism to uniformly distribute silage in feed bunks, and c. provision for loading wagons or portable feed bunks where silage must be transported from silo to distant feed bunks; (2) incorporate in design of above equipment or develop additional equipment as needed for handling soiling crops.
Agr. Engin. 1210 (NC-23)
- Miss. Mechanized Harvesting and Feeding of Silage. To (1) evaluate available machines as to use in mechanized feeding program; (2) store silage harvested by conventional equipment, row crop harvester and other regular equipment as required, (3) develop, modify and adapt transportation units so that mechanized and/or self feeding is practical; (4) determine efficiency of feed system in converting feed into beef or milk, especially automatic feeders.
Agr. Engin., Dairy Husb. HB-10
- Mo. Environmental Requirements for Farm Animal Shelters.
a. Measurement of Dairy Barn Heat and Moisture Production.
b. Determination of Operational Limits for Use of Open Housing for Young Calves. c. The Design and Development of a Portable Scale for Field Measurements of Insensible Weight-Loss of Cattle. d. Design and Development of a Partitional Calorimeter for Cattle.
Agr. Engin. 136 (NC-23) Coop. ARS
- N.Y.C. A Study of the Feasibility of Pipeline Milkers on Commercial Dairy Farms in New York. Learn capital outlays and operating costs connected with pipelines of various types and lengths and efficiencies resulting from their use.
Agr. Econ. 221
- Pa. An Economic and Engineering Appraisal of Mechanical Barn Gutter Cleaners. To learn (1) time needed to clean gutters for different cleaner installations using various bedding materials; (2) physical forces imposed on different types of cleaners as they may be affected by various bedding materials and frequency of cleaning, to improve design of cleaner; (3) time required for cleaning before and after installation of gutter cleaner; (4) economic feasibility of using gutter cleaners for different size herds.
Agr. Engin., Agr. Econ. 1282-B

Physiology and Biochemistry

A. Milk Secretion

- Ariz. The Influence of Oxytocin on the Initiation of Lactation of Prepartum Milked Cows. Learn if intravenous injections of oxytocin will stimulate initiation of lactation prepartum.
Dairy Sci. 450
- Del. Serum Protein-Bound-Iodine (PBI) Levels and Their Relationship to Milk Production by Dairy Cattle. To study the feasibility of using the serum protein-bound-iodine level as a means of predicting the lifetime production of milk.
Anim. & Poultry Indus. 47-AI (NE-30)
- Ga. Some Effects of Various Hormone Treatments on Heifers Stimulated to Obtain Udder Growth Before Breeding and Upon Cows Artificially Induced to Lactate. To (1) determine the effect of various treatments of four to ten month old dairy heifers with combinations of stilbestrol and progesterone upon the immediately observed and continued udder growth, sexual activity and breeding efficiency, udder and body conformation, and lactation yields following calving, (2) ascertain whether there is a relationship between the degree of udder proliferation achieved and subsequent production levels, (3) ascertain whether artificially stimulated mammary glands have characteristics by which they may easily be distinguished from non-treated glands by simple inspection, and (4) evaluate various hormone treatments of non-breeder cows as to effect on udder growth, initiation of lactation, maintaining or increasing established lactation yields, future breeding efficiency, and on body weight gain and conformation.
Dairy Husb. 322
- Ill. The Biosynthesis of Milk Protein. Investigate mechanisms involved in biochemical formation of proteins of milk.
Dairy Sci. 35-320
- Ind. Studies on the Progestational Hormone in the Bovine. To determine (1) effects of progesterone on development and function of dairy cow's udder, (2) progestational activity of blood during estrus cycle and gestation, (3) approximate time corpus luteum must be active to maintain pregnancy, and (4) mode of elimination of progesterone.
Dairy Husb. 656

- Maine Inheritance of Physiological Factors Responsible for High Milk Production. To learn (1) relation of constituents in blood to variation in milk production and efficiency of feed utilization, (2) heritability of physiological factors or blood constituents.
Anim. Indus., Chem., Anim. Path. 63 (NE-30)
- Md. The Physiology of Milk Secretion. To supply information as to the most important physiological factors which control milk secretion. Growth hormone will be injected in different amounts over varying periods of time and in different stages of lactation to determine effect upon lactation, duration of change, and quantity needed for good response.
Dairy Husb. G-38
- Md. Relationship of the Hypophyseal Growth Hormone and of the Pituitary-Adrenal System to the Productive Capacity of Dairy Cattle for Reproduction and Milk Production. To establish (1) importance of adrenal and pituitary-adrenal system for reproduction, milk production, normal health of dairy cattle and ability of cows to withstand stress, especially during parturient period, (2) mode of action of growth hormone in increasing milk production.
Dairy Husb. G-46 (NE-30)
- Md. The Physiology of Mammary Gland Growth and Development and the Initiation and Maintenance of Lactation with Particular Reference to Endocrine Relationships. Elucidate: (1) endocrine factors involved in mammary gland growth and development and their relationship to optimal rate and maximal extent of growth and development; (2) role of endocrine factors in initiation of milk secretion; (3) role of endocrine factors in development and maintenance of a high level of milk secretion.
Dairy Husb. G-50
- Mass. The Relation of Certain Physiological Factors to the Productive Capacity of Dairy Cattle. (1) Develop satisfactory methods of measuring endocrine gland activity; i. e., secretion rates. (2) Ascertain relationship, or lack of, endocrine gland activity to productive capacity of dairy cattle for growth, reproduction, and milk production.
Dairy and Anim. Sci. 36 (NE-30)

- Mich. Hormone Studies Related to the Physiology of Domestic Animals Including Investigations with Radioactive Isotopes. (1) Study mechanisms of thyroid function and variations in secretion rate of lab. and domestic animals. (2) Learn optimum levels and combinations of hormones for inducing mammary growth and lactation. (3) Investigate gameto-kinetic factor in cattle feces with reference to its specificity for pregnancy diagnosis.
Vet. Med., Dairy, Anim. Husb. 25
- Mich. Effects of Hormonal Imbalances on Nutritional Requirements. To determine the effects on specific dietary needs resulting from (1) administering large doses of cortisone, estrogens, androgens, thyroid-active substances, insulin and growth hormone, (2) removing adrenals, gonads, thyroids, or from treatment with thiouracil or alloxan, and (3) it is hoped that these studies will further elucidate interactions between hormones and dietary factors in the body so that both may be used with greater efficacy and safety in the future.
Vet. Med. 105
- Mich. Milk and Milk Secretion. Study (1) rate at which milk can be drawn from udder; (2) phenomena of udder growth and function. (3) Investigate biochemistry and physiology of milk secretion. (4) Use these data in selection, breeding, and management of dairy cattle for more economical and efficient production.
Dairy 819
- Minn. The Physiology and Biochemistry of Lactation. I. Factors Involved in the Development of the Mammary Gland. II. Factors Involved in the Synthesis of Milk Ingredients. III. Factors Involved in the Evacuation of Milk from the Mammary Gland.
Dairy Husb. 1602
- Minn. Studies of Adrenal Glands of Ruminants. (1) Work out satisfactory technique for morphological and biochemical studies of adrenal medulla. (2) Apply techniques in correlated histological, histochemical, and biochemical studies of adrenal medullae of ruminants, from animals under conditions of rest and stress.
Vet. Med. 2628
- Miss. The Role of the Pancreatic Hormones in Dairy Cattle. Study (1) effects of pancreatectomy on dairy goats and dairy cows; (2) effect of glucagon, insulin, and growth hormone on milk production and energy metabolism in dairy cattle using intact and pancreatectomized goats and cows; (3) gross, histological, and histochemical changes in pancreas, pituitary, and liver due to hormone administration and pancreatectomy.
Dairy Husb. HG-12

- Mo. Hormone-Enzyme Interrelations in the Mammary Gland.
A. Enzymes of the Mammary Gland. To study (1) "spreading factor" of the mammary gland, (2) energy metabolism of normal rat mammary gland during growth, lactation and involution, and (3) nucleic acids of rat mammary gland during growth, lactation, and involution.
Dairy Husb. 28
- Mo. The Endocrine-Genetic Interrelations in Milk Secretion.
To (1) test various pituitary hormones which are now available for mammogenic activity to determine if the mammogenic hormone of the pituitary which is thought to stimulate growth of the mammary gland is the same as the recognized hormones or is a separate hormone, (2) test methods of measuring amount of progesterone in blood to determine level of progesterone in blood during pregnancy of cattle, (3) study dwarf cattle to determine endocrine cause of dwarfism, trying thyroid replacement therapy, and (4) study excretion of androgens via the feces, and have isolated crystals which we hope to characterize this year; then give attention to products of progesterone and adrenal hormone metabolism.
Dairy Husb. 80 Coop. AEC
- N. J. Hormonal Preparation of Dairy Animals for Lactation. To study the influence of endocrine secretions on milk and milk fat production in dairy cattle with special reference to the thyroid, pituitary, and adrenals.
Dairy Indus. 129
- N. J. Factors Controlling the Extent of Duct Growth in Mammary Glands. Learn (1) role of anterior pituitary gland in mammary duct growth; (2) ovarian influence on mammary gland growth in heifer calves up to 3 months old.
Dairy Indus. 130
- N. J. Thyroid Activity, Its Relation to the Productive Capacities of Dairy Cattle, Its Heritability and Use as a Selection Index.
(1) Relate certain measures of thyroid gland function to productive capacities of dairy cattle, milk production, growth and reproduction so as to develop criteria for selecting high productive characteristics. (2) Learn heritability of thyroid gland function in dairy cattle. (3) Based on heritability found, test the measure of thyroid function found to be most suitable as selection criteria for better breeding.
Dairy Indus. 153 (NE-30)

- N.Y.C. The Physiology and Metabolism of Fats and Related Constituents in Animals. To study metabolism of fats and related constituents in lactation, and to establish basic factors influencing milk and fat yield and the nutritive value of fats and related compounds of milk.
Dairy Indus., Agron., Anim. Husb. 61
- N.Y.C. The Role of Enzymes and Enzyme Systems in Growth and Function of Mammary Gland Tissue. (1) Evaluate biochemical relationships of mammary gland tissue during growth phase versus lactating phase and study effects of various hormones on these mechanisms. (2) Study properties of fat splitting enzymes or enzyme systems in milk.
Biochem., Dairy Indus. 73
- N. Dak. Physiological Factors Involved in the Milk Ejection Reflex of Dairy Cows. Learn if there is an enzyme (oxytocinase) present in the blood of dairy cows which inactivates oxytocin.
Dairy Husb. 11-3
- S. C. Seasonal Fluctuations in Milk Production. To study (1) effect of high atmospheric temperatures and cold, wet weather on persistency of milk production; and (2) influence of physiological changes, breed and color of dairy cows on milk production by seasons.
Dairy Husb. 71
- S. Dak. Endocrine Factors Affecting Milk Production. To establish the (1) role of relaxin in milk production and particularly milk ejection, (2) interrelationships among estrogen, progesterone, and relaxin as they affect reproduction and milk production.
Dairy Husb. 310
- Tenn. The Effect of Supernormal Growth of Dairy Heifers Upon Their Milking Qualities. To determine if there is a beneficial or harmful effect upon milk production ability of dairy heifers following rapid growth and fattening before their first lactation.
Dairying 93
- W. Va. The Relationship of Plasma Protein-Bound Iodine to Productive Potential in Dairy Cattle. To learn (1) if significant differences can be detected between plasma protein-bound I (PBI) levels of individual dairy heifers at various ages, (2) normal range of plasma PBI, (3) relationship between plasma PBI and milk production.
Biochem., Dairy Husb., Anim. Husb. 96 (NE-30)
- Wis. The Physiology of Lactation in Cattle. To study mechanisms involved in initiation and maintenance of lactation, mechanics of machine milking, precursors of milk constituents, and enzymes involved in synthesis of milk.
Dairy Husb. 667

Physiology and Biochemistry

B. Rumen Digestion, Bloat

- Colo. Intermediary Metabolism of the Ruminant as Influenced by Various Feeds. To determine (1) proportions of acetic, butyric and propionic acid present in rumen under different feeding conditions, (2) proportion of these acids which results in highest milk production, (3) feeding system which will most closely approach ideal proportions of these acids, (4) effect of various feeds upon types and amounts of lower fatty acids in milk, and (5) types and amounts of fatty acids and other rumen metabolic products associated with growth and gain in live weight.
Anim. Indus. 170
- Ill. Studies on Protein and Carbohydrate Metabolism in Ruminants, Especially as Affected by Rumen Microorganisms. Increase efficiencies in those metabolic processes of rumen microorganisms by which nutritional demands of ruminants may be satisfied.
Dairy Sci. 35-315
- Ind. Biochemical Aspects of Ruminant Bloat. To learn (1) constituents of feeds and forages that increase bloat, (2) biochemical compounds and reactions involved in bloat.
Vet. Sci., Biochem., Agron. 828
- Iowa Increasing the Usefulness of Forage Crops and High-Cellulose Roughages by Improved Rumen Function (Zymo-Chemistry) in Beef Cattle and Sheep. To (1) increase usefulness of forage crops and high-cellulose roughages thru improved rumen function or improved bacterial digestion within rumen.
Anim. Husb., Chem. 1208
- Iowa Physical and Chemical Aspects of Bloat. To (1) study effect of dietary components and therapeutic agents on physical and chemical characteristics of rumen ingesta, (2) determine relation of dietary characteristics to incidence of bloat, (3) determine various physical and chemical characteristics of rumen ingesta and of blood and other tissues from bloated animals, (4) ascertain efficacy of prophylactic procedures and therapeutic agents, and (5) determine relation of physical characteristics of animal to incidence of bloat.
Anim. Husb. & Dairy Husb., Chem., Vet. Med. 1267 (NC-27)

- Iowa Cellulose Digestion by Pure Cultures of Rumen Microorganisms. Isolate and characterize (1) rumen microorganisms which are active cellulose digesters; (2) cellulose dextrans and oligosaccharides and products formed from them by enzymes or pure cultures of rumen microorganisms. Study (3) by means of artificial rumen technique, the availability of isolated cellulose breakdown products to mixed cultures of rumen microorganisms in predicting usefulness of these products, (4) potential utility of cellulolytic enzymes preparations as feed additives or as solubilizing agents for coarse roughages prior to feeding.
Anim. Husb., Chem. 1357 (NC-25)
- Kans. A Study of the Intermediary Metabolism of Rumen Microorganisms with Reference to the Formulation of End Products from the Carbohydrates of Roughage. Elucidate mechanisms in formation of end products, as fatty acids, from the carbohydrates of roughage. Study interrelationship of apparently nonuseful end product methane with production of useful carbonaceous end products. Isolate enzyme systems capable of carrying on one step reactions found in carbohydrate fermentation.
Bact., Dairy Husb. 425 (NC-25)
- Kans. Interrelationships of Feedstuffs Combinations, Appetite, Rumen Function, Digestibility, and Rumen Microorganisms in Roughage Utilization. To learn (1) interrelationships of feedstuffs combinations, appetite, rumen function, digestibility, and rumen microorganisms so as to explain differences among animals in their ability to utilize roughage, (2) parts played by rumen microorganisms and combinations of feedstuffs in efficiency of roughage utilization.
Dairy Husb. 455
- Ky. In Vivo and In Vitro Studies of the Cause and Prevention of Bloat. Isolate and identify by in vivo and in vitro experimental procedures the factor(s) causing bloat in ruminants grazing forages and learn practical ways in which causative factor(s) may be counteracted.
Anim. Husb. 252

- Ky. Rumen Physiology, to Include the Metabolic Activity of Rumen Microorganisms, As Related to the Digestibility of Feedstuffs and Rumen Dysfunction. (1) Learn why dairy animals go off feed when fed certain types of hay or high levels of concentrates. (2) Study role played by stable froth in etiology of bloat. (3) Learn effect of changing ration on rumen bacterial metabolism. (4) Obtain precise information regarding relationship that may exist between rumen microbial activity and digestibility of various feeds. (5) Measure amounts of volatile fatty acids produced in rumen on various rations. (6) Establish rates of absorption of short chain volatile fatty acids from rumen at various concentrations and pH levels.
Anim. Husb. 401
- La. Fundamental Causes of Bloat in Ruminants. To determine (1) basic causes of bloat as related to physiological, biochemical, bacteriological, nutritional, and anatomical criteria, (2) relationship of various pasture management and grazing practices, pasture mixtures, soil types and soil fertility levels to occurrence of bloat, (3) mode of inheritance and frequency of occurrence of bloat in related animals, (4) value of various recommended treatments for bloat and their effects under controlled conditions on subsequent milk production, (5) relationship of the physical condition of the animal to susceptibility to bloat, and (6) whether or not bloat produced experimentally and under normal feeding practices are the same.
Dairy 840
- Md. A Study of Factors Affecting the Availability and Utilization of Nutrients in Feeds and Their Influence upon Body Composition, Growth, and Milk Secretion. To (1) conduct feeding and balance tests with dairy cattle, in which the nutritive value of different feeds and factors affecting their use will be studied, and accuracy of present methods of feed evaluation will be examined, and (2) study role of rumen microorganisms in the use of different kinds of feedstuffs and the chemical and physiological pathways by which the microorganisms and host animal assimilate various metabolites.
Dairy Husb. G-39
- Mass. In Vitro Studies on the Production of Volatile Fatty Acids from Single Substances of Known Structure Particularly Carbohydrates by Microorganisms from Mature Bovine Rumen. Learn (1) relative yields of total volatile fatty acids from various single pure substances of known structure when fermented in vitro by mature bovine rumen microorganisms; (2) effect of various amounts of urea on yield of volatile acids under above conditions.
Chem. 26

- Mich. The Use of Nitrogenous Materials in Ruminant Nutrition.
To (1) determine optimum protein levels needed to obtain maximum use of roughages; (2) determine extent to which urea or other simple N sources can be used in place of natural protein; and (3) establish role of other nutrients such as trace minerals and organic growth promoting factors required to produce maximum digestion of cellulose and other rather indigestible components of feeds.
Anim. Husb., Agr. Chem. 118
- Mich. Investigations of the Causes and Methods of Control of Frothy Bloat. To learn (1) chemical and physical properties of saliva, (2) relationship of saliva and its components to frothy bloat, (3) effect of rations on amount of froth produced, (4) role of microorganisms in production and stabilization of froth in rumen.
Dairy, Agr. Chem. 812 (NC-27)
- Mich. Utilization of Roughages Via Rumen Fermentation. (1) Learn factors increasing the magnitude and efficient use of complex carbohydrates. Study (2) factors controlling growth and activity of these microorganisms; (3) relation between structural organization of roughage and efficiency of digestion.
Dairy 855
- Mich. Fermentation in the Rumen of Dairy Cattle. (1) Learn products of digestion of non-cellulosic carbohydrates of forages and quantitatively estimate their importance to the cow. (2) Study ways of controlling fermentation to best advantage of cow. (3) Evaluate effect of non-cellulosic carbohydrates of forage on other phases of rumen fermentation as synthesis of protein and carbohydrate. (4) Study role of specific microorganisms or groups of microorganisms in carrying out this fermentation.
Dairy 856
- Minn. Bloat Producing Mechanisms in Ruminants. To (1) clarify poorly understood motor control mechanisms in the ruminant stomach, especially the forestomachs, (2) develop a bioassay procedure for toxic, bloat-producing legume extracts.
Anim. Husb., Dairy Husb., Vet. Med. 2624 (NC-27)

- Miss. Investigation of Artificial Rumen and In Vivo Techniques for Measuring the Rumen Breakdown of the Resistant Fraction of Small Samples of Forages. To (1) develop system of evaluating digestibility of forages by ruminants which is adaptable to small quantities of forage and which is less expensive and time consuming than existing systems, and (2) test application of this system to studies on effect of stage of maturity at cutting and methods of preservation of various forage crops on their digestibility.
Dairy Husb. HG-2
- Miss. A Study of Enzymic Cellulose Digestion. (1) Attempt a fractionation of cellulase from rumen contents. Study (2) effects of certain products reported to be stimulants of cellulose digestion on cellulase system; and (3) effect of rumen environment on the physical structure of feed particles prior to attack by cellulase.
Dairy Husb. HG-13
- Miss. A Study of the Causes and Prevention of Bloat in Cattle. To (1) study relationship of incidence of bloat to fertilizer treatment, soil type and soil fertility; and (2) study various preventive treatments, such as minerals, drugs and management practices.
Anim. Husb. HE-4
- Miss. The Effect of Antibiotics and Type of Ration on Rumen Function as Determined by Changes in Microbial Flora, Synthesis of Vitamins, and Synthesis of Proteins. To determine effect of antibiotics and type of ration on (1) cultural and morphological types of microorganisms in fully developed rumen, (2) synthesis of vitamins in rumen, and (3) synthesis of proteins in rumen.
Vet. Sci. HN-1
- Miss. A Study of Microbial Activity in the Rumen as Related to Bloat. To learn (1) if there are differences in types of bacteria found in bloating and nonbloating animals; (2) if the rate or amount of polysaccharide formed by rumen microflora is altered when an animal is pastured on clover; (3) effect of antibiotics on rumen activity of animals pastured on clover.
Anim. Husb. HN-3
- Mo. Rumen Culture. To (1) set up in lab an artificial rumen with conditions simulating those found in natural rumen, (2) study by quantitative chemical analysis the changes that occur in a ration as it is fermented in artificial rumen, (3) study methods of preserving rumen organisms so they will be available for inoculation of artificial rumen, and (4) study effects of these preserved rumen microorganisms on a ruminant.
Agr. Chem. 152 Coop. ARS

- Mo. Pasture Improvement. d. The Incidence of Bloat and Methods for Its Control. To determine (1) under what conditions pastures produce a high incidence of bloat, and (2) if simple methods of management can be used to control it.
Anim. Husb. 154-d
- Mo. Ruminant Digestion. a. Development and Testing of Techniques for the Study of Ruminant Digestion. b. Chemical Compounds Which Affect the Digestion of Roughages by Ruminants. c. An Attempt to Establish Rumen Flora by Inoculation.
Anim. Husb. 168
- Mo. The Specific Role and Synergistic Effects of Microorganisms in Dairy Cattle Nutrition. To determine specific role and requirements of each microorganism in the rumen flora, including biosynthesis of vitamins in the use of feeds by dairy animals.
Dairy Husb. 246
- Nebr. The Mechanism of Digestion of Polysaccharides From Roughages by Microorganisms of the Rumen. Identification of products of digestion of polysaccharides from roughages by bacteria from rumen. Investigation of mechanism of utilization of degradation products of polysaccharides.
Dairy Husb. 491 (NC-25)
- Nev. Isolation and Determination of Bloat Producing Saponins in Nevada Forage. Quantitatively learn saponins or sapogenins present.
Agr. Chem 37 Coop. WURB
- N. H. Investigation on the Microorganisms of the Bovine Rumen. To (1) develop more efficient methods for isolation and cultivation of the microorganisms living in the bovine rumen, (2) classify these organisms, and (3) determine their biochemical role in the ruminant digestion process.
Bact. 62
- N. Mex. Rumen Digestion of New Mexico Roughages. To determine (1) influence of various New Mexico roughages on bovine rumen flora, (2) digestibility of these roughages when fed singly and in combination, and (3) effective supplements needed to obtain maximum rumen digestion of these roughages.
Dairy 16

- N.Y.C. Influence of Feeding and Management Practices of the Young Upon Early Rumen Development and Subsequent Mature Performance. To study the extent to which variations in feeding and management practices of young ruminants can (1) modify "normal" progress of rumen development, (2) affect establishment of typical and/or satisfactory rumen flora, and (3) possible influence of these variations on animals' growth, general health and mature performance.
Anim. Husb. 62
- N. C. Studies on Bloat in Ruminants. Learn normal physiology of eructation. Produce bloat experimentally. Learn chemical and physiological differences between feeds and injesta associated with bloated animals and those associated with normal animals.
Anim. Indus. H-31
- Ohio Digestion Studies. 7. Factors Affecting the Utilization of Feeds by Ruminants. To (1) learn factors affecting roughage digestion in ruminants, using an artificial rumen technique; (2) learn by in vitro methods factors in non-protein N utilization by rumen microorganisms; and (3) apply and further learn factors important in rumen function.
Anim. Sci. 33
- Ohio Bloat in Ruminants. 1. Causes. To investigate causes of bloat based on clinical observations, examination of rumen samples for hydropic properties, volatile fatty acid content and microorganisms variations, and examination of blood concentrations of nitrogenous constituents.
Vet. Sci., Dairy Sci. 123 (NC-27)
- Tenn. Factors Affecting Feed Utilization by Ruminants. (1) Learn and evaluate factors influencing rumen microbial activity. (2) Evaluate new chemicals or feed additives and learn their influence on rumen microorganisms and on utilization by ruminants of feeds common to State. (3) Learn methods of altering rate of feed passage thru digestive tract and ascertain what influence rate of feed passage has on feed utilization.
Anim. Husb. 71
- Va. The Isolation, Propagation, and Nutrition Requirements of Cellulose-Decomposing Bacteria Found in the Rumen of Cattle That are Consuming High-Roughage Feeds. To (1) isolate cellulose-decomposing bacteria from rumen of cattle and design methods for propagation in quantity, and (2) investigate nutritional requirements of cellulose-decomposing bacteria as to carbon, N, minerals, and unidentified growth factors.
Biochem. & Nutr. 86045

- Va. The Effect of Various Protein and Non-Protein Nitrogen Sources on Protein Assimilation by Rumen Microorganisms. To (1) determine if non-protein N of types used in cattle feeds suppresses decomposition of feed protein by rumen microorganisms, and (2) compare proteins of forage crop stems and leaves, seed proteins, and animal proteins of high biological values of N sources in protein synthesis by rumen microorganisms.
Biochem., Anim. Husb., Dairy Sci., Biol. 86046
- Va. Volatile Fatty Acid Metabolism and Glycogen Storage as Related to Age and Dietary Changes. Learn (1) extent of difference of volatile fatty acid absorption by rumen as related to age, development, and associated dietary changes; (2) if differences in ability of liver to handle volatile fatty acid is related to age.
Biochem. & Nutr., Anim. Path. 86092
- Va. The Metabolism of the Major Products of Rumen Fermentation and Gastro-Intestinal Digestion by Tissues from Ruminant Animals. (1) Study relative use of low molecular weight fatty acids and factors affecting their use by ruminant tissue preparations. Learn (2) principal route by which propionate is metabolized by ruminant and nonruminant tissue preparations; (3) effect of age and species differences on ability of tissues to metabolize low molecular weight fatty acids.
Biochem. & Nutr., Anim. Husb., Dairy Sci. 86098
- W. Va. Methods to Increase Non-Protein Nitrogen Utilization by Ruminants. To evaluate a variety of non-protein nitrogenous compounds which may be useful as replacements for protein concentrates in ruminant rations containing a high proportion of roughage.
Anim. Husb., Biochem. 45
- Wis. The Functions of the Rumen and Organisms Associated with the Rumen in the Nutrition of Dairy Cattle. To investigate the digestive processes occurring in the rumen of the dairy cow and their relation to fulfillment of her nutritional requirements for maintenance, production, and reproduction.
Dairy Husb., Bact. 758

Physiology and Biochemistry

C. General

- Ariz. The Relation of High Environmental Temperature to Reproductive Performance. Learn effects of high environmental temperature to reproductive performance of dairy cows and bulls.
Dairy Sci. 449
- Ill. Carbohydrate Metabolism of Ruminants. Employ red cells of ruminants as a model system in a study of the metabolism of their tissues.
Dairy Sci. 35-323 (NC-25)
- Mo. Influence of Climatic Factors of Shelter Requirements of Dairy Cattle as Indicated by Physiological Reactions and Productivity. To (a) develop scientific information on effect of air movement at different temperatures and humidities upon dairy cattle and relate such information to requirements for housing dairy cattle; (b) study specific effects on animals of radiations from each of following spectral regions: ultra-violet, blue-violet, yellow-green, red-orange, near infrared, as compared to white light and to darkness; (c) study effect of radiations, similar to sunlight, at several intensities, and environmental temperatures.
Agr. Engin. 66 Coop. ARS
- Mo. Influence of Climatic Factors on Milk Production, Growth and Related Physiological Reactions. b. The Effects of Environmental Temperature on Growth and Related Reactions in Heifers, Birth to One Year. To study effects of 3 environmental temperatures: 1. optimum, 50° F. plus or minus 5° F; 2. hot-weather with daily range of 75° F to 95° F daily; and 3. natural outdoor conditions.
Dairy Husb. 125 Coop. ARS
- N. J. A Study of the Usefulness of Blood Antigens in Breeding Methods of Dairy Cattle. To learn (1) existing genetic association between presence or absence of antigens to reproductive factors and other characteristics, (2) if blood antigens serve as markers in young animals to identify their inheritance of developmental qualities from proved parents.
Dairy Indus. 138 (NE-1)

- N.Y.C. Means of Improving the Meat Quality of Slaughter Dairy Cows. Learn effects of estrogen treatments on slaughter dairy cows of advanced age during a 6-8 week feeding period. Anim. Husb. 67
- Ohio The Relationship Between the Serum Protein-Bound Iodine and Plasma Cholesterol in the Bovine and Their Possible Application to Dairy Production. To (1) learn degree to which dietary sources of iodine may interfere with specificity of protein-bound-iodine (PBI) test as measure of thyroid activity in blood; (2) study relation between PBI and cholesterol in blood along with eosinophil counts to measure possible stress on adrenal cortex due to thyroprotein feeding; and (3) ascertain degree of breakdown of protamone and other thyroidal substances in rumen by microorganisms. Dairy Sci. 13
- Ohio A Study of the Cellular Antigens in the Blood of Cattle. A preliminary period of 6 to 12 months required to produce testing fluids with which to recognize all known cellular antigens in blood of cattle. Blood of animals available for production of immune sera will be characterized. With this information animals selected for immunization, after period of immunization the cow will be bled and the antiserum collected and preserved. By antibody absorption each such immune serum will be fractionated in order to obtain the specific testing fluid for each of known antigens. Blood samples collected from offspring and their dams in herds using artificial breeding. Many offspring from particular bull can be studied, information obtained on inheritance of cellular antigens. Production records of all animals whose blood is examined will be recorded, and data analyzed for correlation of 2 inherited characters. Determine parentage in cattle. Calf has a particular antigen in its blood only if that antigen is present in blood of 1 or both of its parents. The discovery of still unrecognized antigens will increase usefulness of method of identifying the animals. Dairy Sci. 62 (NC-2)
- Pa. Influence of Selected Drugs and of Management Practices on Dairy Cattle Performance. To learn (1) reactions of genetically different strains of cattle to a wide variety of stimuli with an apparatus designed to provide a record of fear, aggressiveness, and flight response, (2) effectiveness of reserpine, rauserfia, etc. in minimizing fear and flight response, (3) value of any drugs in quieting nervous animals and making them tractable. Poultry Husb., Dairy Sci. 1270

Wyo.

Blood Typing Beef and Dairy Cattle to Study Possible Association of Blood Groups with Economic Characteristics.

To (1) study possibility of genetic association between blood groups and economic characters; (2) study effect of inbreeding and/or linebreeding on blood group frequency; (3) search for additional blood groups in known blood systems, and (4) study effect of, and control measures for, anaphylaxis in immunized animals.

Anim. Prod., Vet. Sci. & Bact. 556

Reproduction and Artificial Insemination

- Ark. Effects of Processing, Shipment, and Storage on the Livability of Dairy Sire Semen Under Arkansas Conditions.
To develop adequate systems and improved practices for processing and transportation of dairy bull semen under conditions in southern states, particularly Arkansas, including studies of various methods of processing, packaging, handling, storing, and transporting dairy sire semen with reference to quality, viability, and impregnating ability.
Anim. Indus. & Vet. Sci. 296
- Calif. Hormonal Control of Reproductive Processes in Farm Animals. Learn (1) levels of hormones controlling reproductive processes in tissues and fluids of domestic animals at various reproductive stages; (2) efficacy of specific hormones in controlling sexual maturity, estrus, ovulation, maintenance of pregnancy, parturition.
(Davis) Anim. Husb. 941
- Calif. The Relation of the Pituitary, Adrenal, and Gonads to Reproductive Status of Normal and Low-Fertility Animals.
(Davis) (1) Relate histological appearance of pituitary, adrenal, ovaries, and uterus to stages of estrous of cows of normal reproductive history. (2) Compare histological differences of normal cows to cows with different types of lowered fertility. (3) Relate histological conditions in organs and semen of bulls with different types of lowered fertility. (4) Relate histological conditions of pituitary and adrenal to their hormone content.
Anim. Husb. 1550 (W-49) Coop. ARS
- Calif. Steroid Metabolism in Domestic Animals. Elucidation of
(Davis) fundamental aspects of steroid physiology in domestic animals, especially in ruminants. (2) Development of rational therapeutic measures in endocrine disfunction and/or other metabolic derangements manifested via altered steroid physiology.
Anim. Husb. 1659
- Colo. Cause and Treatment of Testis Failure in Sub-Fertile Bulls.
To (1) investigate some basic factors in spontaneous testis failure, (2) establish criteria by which types of testis failure can be classified, and (3) employ and test available hormone preparation in attempts to correct such conditions.
Chem., Anim. Dis. 210 (W-49)

- Conn. (Storrs) Diagnosis and Control of Infectious Causes of Reproductive Inefficiency in Cattle, with Particular Reference to Vibrio Fetus. (1) Conduct basic research on nutritional requirements and serology of V. fetus to improve methods of diagnosis. (2) Bulls. Improve methods of diagnosis, evaluate methods of treating infected bulls, and learn if antibiotic treatment of semen is effective. (3) Cows. Evaluate vaccines and different methods of vaccination in preventing vibriosis. (4) Test for vibriosis in animals other than cows. (5) Isolate an infectious agent from cows that abort or require repeated services.
Anim. Dis. 123 (NE-1)
- Idaho The Effect of Progesterone Therapy on Breeding Efficiency in Cattle. Learn (1) effects of progesterone administration following breeding on conception, implantation, and maintenance of pregnancy; (2) types and percentages of abnormalities of the reproductive system present in apparently normal cows by manual examination at time of estrus.
Dairy Husb., Vet. Sci. 281 (W-49)
- Ill. Artificial Insemination and the Improvement of Fertility in Dairy Cattle. To improve conception rate of cattle bred by this practice and increase efficiency of method. Plans for work in future will be concerned with (1) sperm production, (2) semen preservation in vitro, and (3) effect of environment of sperm.
Dairy Sci. 35-316
- Ill. The Metabolism of Spermatozoa and Its Control. To study metabolic pathways by which spermatozoa derive energy and determine factors influencing metabolism of spermatozoa with view to control of metabolic processes and of the length of fertile life.
Dairy Sci. 35-317
- Ill. Endocrine Factors in Dairy Cattle Performance. (1) Increase fundamental knowledge of hormone levels and genetic and environmental factors affecting these levels. (2) Study levels of gonadotrophic and sex hormones by tissue culture technique and study stimuli originating in reproductive organs controlling these levels.
Dairy Sci. 35-321

- Ill. The Effect of Feeding the Soybean Plant or Its Fractions on Animal Reproduction, Growth, Lactation, and Aging. To (1) learn cause for impaired reproduction and other physiological failures in female rabbit fed a diet composed of 49.5 parts soybean hay, 49.5 parts of ground wheat and 1 part NaCl, (2) extend study to dairy cattle, (3) study soybean dietary factors as related to vitamins, hormones, and body metabolism.
Dairy Sci. 35-312
- Iowa Reproduction in Farm Animals. (1) Quantitative study of action of estrogen and progesterone on estrus in ovariectomized heifers and cows. (2) Comparison of estrogens as estrone, estradiol benzoate, and diethylstilbesterol on estrous response of ovariectomized cow.
Anim. Husb. 1325
- Kans. A Study of Some Environmental and Physiological Factors Associated with Bovine Reproduction. To determine effects of estrual cycle and variations and associated pathological changes on reproductive efficiency.
Dairy Husb. 391
- Kans. Embryology of Dairy Cattle. (1) Obtain, study, and describe a series of embryos of dairy cattle. (2) Establish criteria of normal embryogeny. (3) Learn causes of embryonic death.
Zool., Dairy Husb. 426
- Kans. Type of Barn Construction as It Affects Comfort and Breeding Efficiency of Animals. (1) Study effects of temperature, relative humidity, solar radiation, air movement, etc., on the comfort and breeding efficiency of animals stabled in animal shelters.
Agr. Engin., Dairy Husb. 480
- Ky. The Effect of Delayed Fertilization on the Development of the Ovum of Repeat-Breeding Dairy Heifers. Learn if age of ovum at time of fertilization has an effect on embryonic death rate in repeat-breeding dairy heifers.
Anim. Husb. 409
- La. Breeding Disorders. To (1) attempt to determine basic cause or causes for high anestrus rate found in La. cows, and (2) investigate effectiveness of various treatments in alleviating conditions found.
Vet. Sci., Dairy 765

- La. Effects of Air Movement and Air Movement Plus Sprinkling on Semen Production, Fertility and Physiological Responses of Dairy Bulls under Southern Conditions. To develop practical management procedures for bulls which will result in production of good quality semen and high fertility during summer in the areas affected by high temperatures and high humidity.
Dairy 842
- Maine Causes and Prevention of Reproductive Failures in Dairy Cattle. To study (1) factors involved in retained placenta and (2) specific causes of breeding failures in individual cows.
Anim. Path., Anim. Indus. 31 (NE-1)
- Mass. Causes and Prevention of Reproductive Failures in Dairy Cattle. To (1) obtain more complete picture of histological characteristics of bovine corpus luteum, cotyledon and placentome than is now available, (2) note more important changes occurring at various ages, at selected stages of estrous cycle, and during early pregnancy, and (3) compare histological pattern for normal cattle with appearance of tissues from animals with histories of breeding trouble.
Dairy & Anim. Sci. 33 (NE-1)
- Mass. Physiology and Reproduction of Dairy Cattle. To (1) investigate possible existence of pattern alterations in amino acids, proteins or other constituents in blood or urine associated with estrous cycle or gestation, (2) identify physiological processes in maintenance of corpus luteum thru course of pregnancy subsequent to conception, and (3) investigate effect of pre- and post-ovulatory environment on embryo survival thru use of embryo transplantation.
Dairy & Anim. Sci. 34
- Mich. A Study of Reproductive Disorders of Livestock, Especially Cattle. 1. A Study of Laboratory Animals of Hormonal and Nutritional Factors Concerned in Reproduction. 2a. A Study in Cattle of Hormonal and Nutritional Factors Involved in Reproductive Disorders Thru Hormonal and Nutritional Therapy. 2b. Studies on Frozen Semen. 2c. To Develop More Practical Methods of Diagnosis and Treatment of Bovine Trichomoniasis.
Vet. Med., Chem., Dairy, Anim. Husb. 74
- Mich. A Study of the Effect of Hormones upon Bacteria Found in the Reproductive Tract of Certain Farm Animals. To determine (1) physiological effect in vitro of gonadal hormones upon pathogens isolated from reproductive tract, and (2) same effects in vivo of these hormones upon selected infected animals.
Vet. Med. 109

Mich. Physico-Chemical Characteristics of Mammalian Reproductive Processes in Relation to Sex Control. (1) Develop better techniques and equipment in electrophoresis of rabbit spermatozoa in order to increase percentage of success. (2) Attempt application of these methods to dairy cattle. (3) Develop a technique of immunization against either sex. (4) Study, by physico-chemical means, the sperm cell as a whole and each constituent part separately.

Dairy 865

Minn. Studies on Physiological Factors Affecting the Degree of Fertility and Methods of Increasing Breeding Efficiency in Livestock. (1) Learn cause of low fertility in sires and provide methods of increasing and maintaining fertility; uncover more basic information related to normal reproductive processes in the male; study use of supplementary endocrines in male and their effects on reproductive processes. (2) Complete studies on physiology of fetus in utero.

Anim. Husb. 1424

Miss. A Study to Determine the Use of Exogenous Progesterone in the Control of the Reproductive Phenomena in Beef Cows. To (1) learn dosage of progesterone needed in beef cattle to best control ovaries in production of viable ova; (2) learn effect of various dosages on endometrium as shown by survival and development of viable ova; and (3) when a most optimum dosage is found, conduct a second experiment comparing results from this dosage when used on another group of cows, with results from a comparable group of non-treated control animals.

Anim. Husb. HE-7

Miss. The Relation of Exogenous Estrogen to Estrus, Ovulation and Ovarian Characteristics in Dairy Cattle. To study (1) effect of varying levels of exogenous estrogen administered at various times during estrus cycle on length of estrus, time of ovulation, subsequent luteal and follicular development and the gross, histological, and histochemical characteristics of the ovary; (2) gross, histological, and histochemical characteristics of the ovaries and corpora lutea of cows slaughtered at various known stages of estrus cycle; (3) effect of a single dose of estrogen administered 24 hours after parturition, on recovery of ovary following gestation.

Dairy Husb. HG-7

- Miss. The Control of Specific Types of Bacteria in the Reproductive Tract of Difficult Breeding Cows by the Use of Antibiotics. To develop suitable treatment for controlling bacteria which appear to be associated with lowered breeding efficiency in dairy cattle and determine effect of this treatment on conception rate of difficult breeding cows.
Dairy Husb. HG-8
- Mo. Increasing the Effectiveness of Artificial Insemination as a Means of Improving Dairy Cattle. To study role of cations, energy transformation mechanisms and general metabolic reactions in spermatozoa viability and fertility, using data obtained to improve storage methods.
Dairy Husb. 54
- Mo. Biochemical, Physical, and Physiological Aspects in Natural and Artificial Breeding. To make a thorough study of the chemistry and/or biochemistry of male and female germ cells in order to gain knowledge which is needed as a basis for future investigations.
Chem. 81
- Mont. Urinary Estrogenic Excretion by the Bovine. To establish (1) a procedure for quantitatively separating estrogenic substances in cow urine, (2) normal urinary estrogenic excretion pattern during estrous and gestational cycles, (3) effect of conception upon urinary estrogenic excretion pattern, (4) effect of reproductive abnormalities on urinary estrogenic excretion pattern.
Dairy Indus. 19, MS 920 (W-49)
- Nebr. Maintenance of Fertilizing Capacity Bovine Semen Over Long Periods of Storage and Methods of Evaluating Fertilizing Capacity. To increase (1) time that semen can be stored after collection so that increased use of good sires can be practiced, and (2) efficiency of artificial breeding by decreasing number of bulls needed to operate a bull stud, thereby decreasing cost of breeding to the farmer.
Dairy Husb. 241
- Nev. Chorionic Gonadotrophin of the Cow. To (1) characterize gonadotrophic hormone of bovine chorion, (2) attempt to detect gonadotrophin in blood and/or excreta of pregnant cow and (3) compare blood and urinary proteins in non-pregnant and pregnant cows.
Chem., Anim. Husb. 25

- Nev. Physiological Studies of Repeat-Breeding Cows. To explore physiological and pathological disturbances underlying condition of repeat-breeding, and (2) develop satisfactory methods to prevent and treat this condition.
Anim. Husb. 94 (W-49)
- N. H. The Relation of Seminal Fluid Fructose Levels to Factors Affecting Breeding Efficiency. To determine (1) what factors affect seminal fructose levels of dairy bulls, and (2) relationship between seminal fructose levels and reproductive performance of dairy bulls.
Dairy Husb. 67
- N. H. Causes of Reproductive Failure in Cattle Fed Ladino Clover Mixtures. (1) Learn if a suspected adverse effect on reproduction in dairy cattle resulting from feeding Ladino clover-brome-grass forage is real and if it is related to level of fertilization of soil and minor element intake of animal.
Dairy Husb. 76 (NE-1) Coop. U. S. Plant, Soil & Nutr. Lab.
- N. J. Studies on Causes and Prevention of Reproductive Failures in Dairy Cattle. Learn effect of various postpartum treatments upon the reproductive efficiency of dairy cows.
Dairy Indus. 137 (NE-1)
- N.Y.C. A Study of the Technique of Artificial Insemination of Farm Animals, Especially the Preservation of Stored Semen, and the Development of Methods for Increasing the Usefulness of Artificial Insemination in the Field. To develop methods of preserving the fertility of stored semen.
Anim. Husb. 60
- N.Y.C. The Effects of Nutrition During Early Growth and Development, Especially the Effect of Prepubertal Nutrition, on the Mature Reproductive Performance of Dairy Cattle. To determine the effects of maximum, normal and restricted intake of an otherwise adequately balanced diet during early growth and development on the subsequent reproductive performance of dairy cattle.
Anim. Husb. 64-A (NE-1) Coop. ARS
- N.Y.C. The Assay of Body Fluids and Excreta of Dairy Cattle for Gonadic and Gonadotrophic Hormones. To (1) establish chemical identity of hormones in bull and cow and their method of excretion, (2) improve existing assay methods and devise new ones which will be more useful in conditions found in cow and bull, and (3) use these methods as rapidly as they are developed to establish hormone levels in normal cow and bull in various stages of reproduction and in cows and bulls in abnormal reproductive conditions.
Anim. Husb. 64-B (NE-1) Coop. ARS

- N.Y.C. Factors Controlling Ovulation in the Cow. To find major factors involved in ovulation, and time at which it occurs in dairy cattle.
Anim. Husb., Dairy Indus. 64-E (NE-1) Coop. ARS
- N.Y.C. A Study of the Factors Affecting Breeding Efficiency in 2000 Cooperating Herds in Artificial Breeding. To obtain breeding and calving data on a large sample of herds maintained under varying environmental conditions and determine what factors are associated with breeding problems.
Anim. Husb., Dairy Indus. 64-G (NE-1) Coop. ARS
- N.Y.C. The Effects of Progesterone and Chorionic Gonadotropins Administered During Estrus on Conception Rate and Repeat-Breeder Cows. Learn if ovulation hastened by hormone treatment will be an effective treatment of certain types of sterility.
Anim. Husb. 64-H (NE-1)
- N.Y.C. The Physiology of the Oviduct. Study mechanism involved in sperm and ovum transport thru the oviduct and study relationship of steroid hormones to oviduct physiology.
Anim. Husb. 64-I (NE-1)
- N. C. Studies on the Effects of High Environmental Temperatures and Humidity on the Performance and Reproductive Efficiency of Farm Animals. To learn (1) extent environmental temperature and humidity affect reproduction in dairy bulls, and establish range in these factors where optimum fertility can be maintained, (2) endocrine physiology of dairy bulls subjected to thermal stress and its involvement in underlying mechanisms affecting body temperature regulation.
Anim. Indus. H-24 Coop. ARS, U. S. Weather Bureau
- N. C. Studies on Low Temperature (-79°C) Bovine Semen Storage. To determine (1) sodium citrate concentration that gives best results, (2) optimum final glycerol concentration, (3) effect of adding glycerol-diluter all at one time and over a period of time, (4) optimum equilibrating time of semen with glycerol prior to freezing, (5) optimum rate of lowering temperature from 5°C to -79°C, (6) semen differences by sires, (7) interaction(s) between above factors, and (8) possibility of maintaining fertility in semen which has been refrozen.
Anim. Indus. H-26

- N. C. Reproductive Inefficiency in the Bovine. (1) Learn nature of sterility in animals leaving herds due to reproductive failure. (2) Produce conditions of lowered fertility comparable to those produced spontaneously. (3) Propose treatments to increase reproductive efficiency.
Anim. Indus. H-147
- Okla. The Carotene Requirements of Holstein Cattle for Reproduction and Lactation. To (1) determine carotene requirements of Holstein cattle for successful reproduction and normal lactation, and (2) study further breed differences as to carotene requirements of dairy cattle.
Dairying, Agr. Chem. 287
- Oreg. Sterility in Dairy Cattle. To investigate phases of sterility in dairy heifers and cows such as sterilities caused by possible infection.
Vet. Med. 136
- Oreg. Increasing Fertility of Male Farm Animals Through Improvement of Semen Production, Evaluation and Preservation. (1) Investigate factors regulating testicular activity particularly as related to increased semen production. (2) Improve methods of semen evaluation to differentiate good quality from that of low fertilizing capacity. (3) Develop better methods for semen preservation to maintain higher vitality of spermatozoa than is present in storage by conventional methods of freezing.
Anim. Husb. 155
- Oreg. Bovine Sperm Movement and Metabolism in Vaginal and Uterine Environments. (1) Obtain records of frequency of uterine contraction, pressure and volume. (2) Determine effect of thyroxin, pituitrin, epinephrine, acetyl-choline, physostigmine and related compounds on uterine activity. (3) Study behavior of uterus of fertile and nonfertile cows under influence of external sources of testosterone, cortisone, estradiol, progesterone and related substances. (4) Determine cholinesterase activity of uterus.
Dairy & Anim. Husb. 360 (W-49)
- Oreg. The Biochemistry, Morphology and Histology of Organs, Tissues, Secretions and Excretions Concerned with Reproduction in Normal, Carotene Supplemented and Carotene Deficient Cattle. (1) Learn carotene, vitamin A, P, Fe and Cu of liver biopsy samples and blood plasma of carotene deficient, carotene supplemented and normally fed cattle and compare with their reproductive performance. (2) Learn content of same factors in thyroid, adrenals, pituitary body, ovaries, and testes of slaughter cattle from those with known reproductive history and performance. (3) Make morphological studies of tissues and organs of reproduction in normal, carotene supplemented and carotene deficient animals.
Dairying, Agr. Chem., Vet. Med. 2-9 (W-49)

- Pa. The Reproductive Capacity of Dairy Bulls as Influenced by Nutrition. To determine the effect of certain dietary factors upon (1) the development of sexual maturity in dairy bulls, (2) the reproductive performance of dairy bulls, with particular reference to the quantity and quality of the semen produced, and (3) the length of the useful reproductive life of dairy bulls.
Dairy Sci. 1064 (NE-1)
- Pa. The Artificial Insemination of Dairy Cattle. A. Improvement of Diluters for the Preservation of Bovine Spermatozoa. To determine whether certain chemical substances can be used in semen diluting fluids to improve the livability and fertility of bovine spermatozoa.
Dairy Sci. 1107-A
- Pa. Metabolism of Bovine Semen. To (1) improve methods used in measuring metabolic processes of semen, with emphasis on use of radioactive isotopes, (2) determine extent of use of exogenous sources of energy of bovine spermatozoa, (3) study pathways of carbohydrate metabolism functional in bovine spermatozoa, (4) study effect of variations in nutrition and management of bull on metabolic activity of spermatozoa produced, and (5) study metabolism of seminal plasma and determine its relationship to metabolism of spermatozoa.
Dairy Sci. 1107-D
- Pa. Low Temperature Preservation of Bovine Spermatozoa.
(1) Improve methods used for freezing and storing spermatozoa at low temperatures.
Dairy Sci. 1107-E
- Pa. The Nature of Infertility in Dairy Heifers. (1) Functionally normal, nulliparous heifers, which have been bred repeatedly will be used to determine: rate of fertilization 3 days after breeding, rate of embryonic mortality between 3rd and 34th days of pregnancy, and microbial flora of reproductive organs and semen used for insemination of these heifers; and (2) functionally normal and abnormal, nulliparous heifers which have been bred repeatedly will be used to determine: frequency and proportional distribution of different types of genital abnormalities and histopathology of reproductive organs and thyroid, adrenal and pituitary glands.
Bact., Vet. Sci., Dairy Sci. 1143 (NE-1)
- Pa. Sexual Behavior and Semen Production of Dairy Bulls. To learn influence of frequency of semen collection on sexual behavior and semen production, (2) range of variability in sexual activity of bulls and develop tests for predicting sexual activity of individual bulls, (3) stimulus conditions favoring maximum sexual activity, and (4) influence of drugs and hormones on sexual behavior.
Dairy Sci., Poultry Husb. 1221

- Pa. Corpus Luteum Removal in Subfertile Dairy Cows. To evaluate effectiveness of removing corpus luteum from ovary of repeat breeding cows as means of improving fertility, as measured by: induction rate of estrus and ovulation, fertilization rate.
Dairy Sci. 1273 (NE-1)
- R. I. A Study of Sterility in Dairy Cattle with Particular Reference to Certain Infections of the Reproductive Tract. To learn some causes which delay breeding or sterility in dairy animals by (1) learning the epizootology and etiology of diseases causing sterility, (2) preventive and control procedures which will be investigated if an organism producing a definite infection is isolated, and (3) determine influence of treatment on incidence of these diseases of the reproductive tracts.
Anim. Path., Anim. Husb. 302 (NE-1)
- S. C. Artificial Insemination of Dairy Cattle. To determine (1) processing procedures most suitable for providing semen capable of producing conception for extended intervals of time after conception, (2) transportation of semen, (3) feeding, management, and environment upon value of semen, and (4) most efficient type of organization, facilities and size of artificial insemination units best suited to South Carolina conditions.
Dairy Husb. 125 (NE-1)
- S. Dak. A Study of the Recovery and Transplantation of the Bovine Ova. To (1) develop techniques for the in vivo isolation of the fertilized and unfertilized bovine ova; and (2) after development of the isolation technique, to develop transplantation studies.
Dairy Husb. 189
- Tenn. The Effects of Radiation on Reproductive Physiology in Farm Animals. To evaluate effects of acute and chronic irradiation on reproductive physiology and growth in farm animals on: (1) semen characteristics, (2) potential fertility in male, (3) estrual cycle phenomena in female, (4) potential fertility in female, (5) endocrine system, and (6) growth of young animals.
Anim. Husb. 66 Coop. ARS
- Tenn. The Effects of Processing and Handling Upon the Livability and Fertility of Bull Spermatozoa. Test and evaluate different methods of processing, storage, and handling of bovine spermatozoa to develop best methods for using bull semen in artificial insemination.
Dairying 89

- Tex. A Study of the Maturation Process in the Ova of Mammals.
To (1) determine normal maturation process of egg nucleus in cow, ewe, sow, mare and mule, (2) ascertain maturation response of egg nucleus during induced ovulation in both the follicular and luteal phase of the cycle, and (3) obtain data for cause of infertility of mammalian eggs.
Anim. Husb. 854
- Tex. A Study of the Nutritional Requirements for Reproduction and Lactation. To learn (1) nutritional requirements for reproduction and lactation using rats as experimental animals, (2) concentrate and identify unidentified factor(s) needed for reproduction and/or lactation, (3) learn kinds and proportion of ingredients to use in diets composed entirely of natural feed stuffs in order for females to wean maximum number of young.
Biochem. & Nutr. 974
- Vt. Causes and Prevention of Reproductive Failures in Dairy Cows. To (1) determine extent and nature of reproductive failures in native dairy herds, including histopathological and microbiological examinations of aborted feti, and (2) develop methods of early diagnosis and prevention.
An. Path. 36 (NE-1)
- Vt. Causes of Impaired Fertility in the Dairy Bull. To (1) examine semen samples from bulls of low fertility for specific infectious agents and evidence of pathological changes in reproductive tract; (2) determine effect of varying concentrations of antibiotic agents on semen from bulls of low fertility; and (3) evaluate new antibiotic agents when added to semen diluent.
Anim. Path. 44 (NE-1)
- Wash. Identify and Measure the Principal Steroid Hormones and Closely Related Compounds Produced by Cattle. (1) Qualitatively identify steroid hormones and closely related compounds in cattle fluids and excreta. (2) Develop or adapt quantitative methods for appraisal of steroid hormones and closely related compounds in cattle fluids and excreta. (3) As suitable methods are developed, appraise excretion rates for extremes in reproductive efficiency and compare with secondary chemical, physiological, and anatomical factors.
Chem., Dairy Sci. 1335 (W-49)

- Wash. Relation of Certain Phosphorus Compounds in Bull Semen to its Metabolism. Learn variations in inorganic, ATP, lipid, and desoxyribonucleic phosphorus in semen with variable rates of fructolysis and lactic acid accumulation.
Dairy Sci. 1344 (W-49)
- W. Va. Breeding Efficiency of Dairy Cows. To study (1) failure of cows to conceive with single service, (2) value of hormones and vitamin C as aid to conception, (3) value of physical therapy as aid to conception.
Anim. Husb., Dairy Husb. 33
- W. Va. Causes of Sterility in Cattle. To study possibility of viruses as a cause of sterility.
Anim. Husb., Dairy Husb. 55 (NE-1)
- Wis. Factors Involved in Fertilization Failure and Early Embryonic Mortality in Cows of Low Fertility. To (1) determine phases of reproductive process where most failure occurs, (2) develop methods of diagnosis of cause in herds under field conditions, (3) identify reproductive failures of a particular nature with most likely cause, and (4) develop, on the basis of findings, researches on breeding, nutrition, disease and management to correct existing low fertility.
Anim. Husb., Vet. Sci., Genet. 532a Coop. ARS
- Wis. Forage Composition and Crop Management as Related to Reproductive Disorders in Cattle on Marsh Areas in Central Wisconsin. Survey in detail plant populations in pastures where abortions have occurred and in those where occurrence is seldom; correlate plant species present with same or other species with known adverse effect. Feed experimental animals plants which might cause abortion in cattle. Study management of unfavorable pastures to see if time of pasturing, stage of growth, season, or past treatment may be involved. Experiment with various treatments or seedings to test factors previously shown as sources of difficulty.
Agron., Vet. Sci. 957

Regional Research

- NE-1 Causes and Prevention of Reproductive Failures in Dairy Cattle.
Conn., Maine, Mass., N. H., N. J., N. Y. C., Pa., R. I., S. C., Vt., W. Va. VI*
(To be discontinued July 1, 1958)
- NE-40 Pathology of Breeding Failures in Cattle.
(To replace the pathology phases of NE-1 on July 1, 1958)
- NE-41 Endocrine Factors Affecting Reproduction and Lactation in Dairy Cattle. (1) To investigate the physiological and environmental factors which influence reproduction, especially the hormonal mechanisms which control ovulation and the formation and function of the corpus luteum; (2) to determine the modes of action and the interrelationships of the hormones concerned with lactation; and (3) to complete the NE-30 (PBI) project.
(To replace the endocrine phases of NE-1 on July 1, 1958)
- NC-2 Improvement of Dairy Cattle Through Breeding. (1) Develop and improve techniques for predicting and measuring the producing and transmitting ability of dairy cattle. (2) Investigate inbreeding (crossline matings) coupled with selection as a means of establishing improved strains of dairy cattle. (3) Investigate crossbreeding, line crossing, and other forms of outbreeding. (4) Determine mode of inheritance of certain physical and physiological factors especially lethals and other abnormalities.
Ill., Ind., Iowa, Kans., Mich., Minn., Mo., Nebr., Ohio, S. Dak., Wis. I
- NC-25 Factors Affecting the Utilization of Feed by Ruminants.
To improve the utilization of roughages by ruminants emphasis upon the utilization of the carbohydrate fraction.
Ill. V-C, Ind. III-A, Iowa and Kansas V-B, Mich. (see part 18)** Minn. III-A, Mo. III-D, Nebr. V-B, N. Dak. (see part 4), Ohio III-C, S. Dak. III-A.

*The Roman numeral (and capital letter) refer to the location in the summary of the contributing project title and objectives.

**See last pages for reference numbers to compilations in other fields.

NC-27

Causes and Control of Bloat in Ruminants. To (1) determine the physical and chemical characteristics of alfalfa and Ladino clover and fattening rations associated with bloat, (2) determine the physical and chemical characteristics of rumen ingesta from normal and bloated animals, (3) study the physiologic responses of ruminants to bloat-producing feeds, chemicals and procedures, and (4) develop and elucidate measures for the control of bloat.

Ind., Iowa, Mich., Minn., Ohio V-B; S. Dak. (see part 23)

S-3

Breeding Better Dairy Cattle for the South. (1) to develop strains of dairy cattle that are more highly adapted to and more efficient under southern conditions. (2) To develop more accurate and more efficient measures of heat tolerance in dairy cattle. (3) To develop selection procedures encompassing such economic traits as heat tolerance, productive level, etc., in their proper relationships to permit maximum genetic improvement from selection.

Ark., Ga., La., N. C., P. R., S. C., Tenn., Tex. I

W-49

Physiological Causes of Breeding Failure. (1) Develop or adapt methods for assay of hormone secretion and excretion. (2) Characterize morphology and biochemistry of organs and tissues concerned with reproduction. (3) Determine the relationship of hormonal and anatomical characteristics with reproductive status.

Calif., Colo., Idaho, Mont., Nev., Oreg., Wash. VI

LIST OF COMPILATIONS OF FEDERAL-GRANT RESEARCH PROJECTS
AT STATE AGRICULTURAL EXPERIMENT STATIONS

ARS-23-8:		
Part :	Subject-Matter Area	Title of Section
Numbers :		
1	Agricultural Chemistry	Agricultural Chemistry
2	Agricultural Economics	a. Prices, Incomes, & General Studies of Com- modities & Industries b. Farm Management c. Land Economics d. Farm Finance & Taxation
3	Agricultural Engineering	a. Land & Water Use & Develop- ment b. Power Machinery & Equipment c. Farm Structures & Materials
4	Animal Husbandry	a. Beef Cattle b. Sheep & Goats c. Swine
5	Dairy Husbandry	Dairy Cattle
6	Dairy Technology	Dairy Technology
7	Entomology & Economic Zoology	a. Field Crop Insects b. Fruit, Nut & Vegetable Insects c. Miscellaneous Insects & Economic Zoology d. Insecticides
8	Field Crops	a. Cereal Crops b. Oil, Fiber, Tobacco & Sugar Crops
9	Food Science & Technology	a. Food Chemistry, Micro- biology, Sanitation & Public Health b. Food Engineering, Processing, Product and Process Develop- ment, Utilization and Waste Disposal c. Food Quality & Standards, Acceptance, Preference, & Marketing
10	Forage Crops, Pastures & Ranges	Forage Crops, Pastures & Ranges
11	Forestry	Forestry

ARS-23-8:

Part :	Subject-Matter Area	Title of Section
Numbers :		

12	Fruits & Nuts	Fruits & Nuts
13	Home Economics	<ul style="list-style-type: none"> a. Human Nutrition b. Housing c. Clothing & Textiles d. Foods-Consumer Quality & Utilization e. Household Economics & Management
14	Economics of Marketing	<ul style="list-style-type: none"> a. Field Crops b. Fruits & Vegetables c. Livestock, Meats & Wool d. Dairy Products e. Poultry & Poultry Products f. Forest Products & Ornamental & Drug Plants g. Cross-Commodity & Functional Studies
15	Meteorology	Meteorology
16	Ornamental & Drug Plants	Ornamental & Drug Plants
17	Plant Pathology & Bacteriology	<ul style="list-style-type: none"> a. Plant Pathology, Botany, & Diseases of Miscellaneous Crops b. Diseases of Field Crops c. Diseases of Fruit Crops d. Diseases of Vegetable Crops
18	Plant Physiology & Nutrition	Plant Physiology & Nutrition
19	Poultry Industry	Poultry Industry
20	Rural Sociology	Rural Life Studies
21	Soils	<ul style="list-style-type: none"> a. Soil Chemistry & Microbiology b. Soil Fertility, Management & Soil-Plant Relationships c. Soil Physical Properties, Conservation & Classification
22	Vegetables	<ul style="list-style-type: none"> a. Vegetable Crops b. Potatoes
23	Veterinary Science	Veterinary Science
24	Weeds	Weed Control

